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ORIGINAL ARTICLES.

THE HEALING OF ULCERATIVE ENDOCARDITIS.*

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SINCE Bouillaud's time (1837) two types of acute endocarditis have been recognized, the vegetative or benignant, and the ulcerative or malignant; but neither anatomically nor clinically can a sharp line of demarcation be drawn separating the one group from the other. Both are by common consent regarded as infectious in origin, though the part that may be played by toxins is not clearly defined. There are striking differences between the anatomical appearance of these forms; the vegetative with its little innocent-looking, warty fringe paralleling the edges of the valves, the ulcerative with massive excrescences, crater-like excavations, perforated valves, and purulent coating. And the contrast is as striking, clinically, between the extremes of a faint cardiac murmur, little or no disturbance in the cardiac force and rhythm and insignificant constitutional disturbances of the benignant, and the fulminant malignant type, with its chills, irregular fever, prostration, typhoid state, embolic phenomena and rapid death.

But between these extremes are to be found all degrees of anatomical alteration; and clinically the one form shades imperceptibly into the other, so that one must often be content to speak of an acute infectious endocarditis or of an acute endocarditis with mild or severe manifestations as the case may be. If it were possible to recognize the micro-organism that is at fault in a given case, it would be a more scientific classification to speak of a pneumococcic, a streptococcic, a gonococcic endocarditis, etc. Yet, until this is possible, it is wise from the standpoint of prognosis and therapy to recognize two types of the disease in the same manner that we often speak of scarlet fever as extremely light in one case or malignant in another, though believing the disease in the two cases to be primarily of the same nature, but modified by greater virulence or number of organisms, by lessened resisting power on the part of the patient, or by failure to eliminate toxins. So, while it is well to preserve the expressions "ulcerative," or "malignant," in connection with endocarditis, it must be remembered that the terms are used rather loosely in an anatomical sense and also, to a certain extent, in a clinical sense.

Clinically by ulcerative or malignant endocarditis is commonly meant an acute endocarditis

accompanied by a fairly uniform complexus of symptoms among which may be mentioned, irregular fever with chills, embolic phenomena, petechiae, bacteria in the blood, pronounced constitutional disturbances in the shape of symptoms of the typhoid state—delirium, subsultus, sordes—progressive anemia, etc. The usual termination of these cases is death within a few weeks, or in one form after many months; and the anatomical finding is the mycotic, destructive lesion of the valves. The prognosis, therefore, is bad or fatal in the malignant endocarditis. Or, to put the statement in another way, it is often said that, if the patient recovers, the case was one of the benignant or vegetative form; if he dies, it was malignant or ulcerative. This is making our disease fit a definition—always a pernicious practice. Perhaps argument to prove the possibility of occasional healing in this severer form is unnecessary, at least before this audience. Yet the impression regarding the fatality of this variety is so prevalent that if a case diagnosed as ulcerative endocarditis recovers, as a rule there is declared to have been a mistake in diagnosis; and treatment in these cases is considered absolutely futile. It may not be amiss, therefore, briefly to call attention to certain facts that indicate the possibility of recovery.

One has a right to question whether an acute endocarditis, with irregular fever, chills, petechial spots, and bacteria in the blood, is of necessity fatal. We may question on the ground of a *priori* reasoning, of clinical observations, and of postmortem findings. Some severe cases of septicemia, in man as in lower animals, recover. Puerperal sepsis, though virulent, is not necessarily fatal. Pneumonia is often accompanied by bacteriemia, by metapneumonic localization, and yet recovery may follow. While one realizes the added seriousness that is due to the establishment of a focus of microbic multiplication and toxin formation in the very center of the vascular system, from which center organisms and their products are freely swept out into the circulation and disseminated to the most distant parts of the body; and while one understands fully the gravity of the mechanical interference with the valvular and muscular mechanisms of the heart that often accompanies an acute endocarditis, one must still feel that it is possible, even here, for the body to resist, for the inflammatory process to subside and for local healing and constitutional recovery to ensue.

This view is borne out by clinical observation. There are records in the literature where competent observers have had cases with the typical symptoms of acute endocarditis of the so-called ulcerative type—chills, irregular pyemic fever,

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petechiae, visceral embolic phenomena, bacteria in the blood—and recovery has followed with the exception, perhaps, of some mechanical lesion due to the scarring of the valve. These cases are exceptional, to be sure; this complexus of symptoms usually means death; but recovery may occur if these observations are correct. It is easy to pick flaws in many of these histories. But there is a value to the impression made by a given case upon a skilled clinician, and his estimate of a case, when he shows capacity to observe carefully and to weigh evidence critically, should be given much weight, even though the crucial tests may be lacking and though his results are opposed to generally accepted opinion.

There is no pretence that this is a complete list of all cases reported as recoveries from malignant endocarditis. More extended search will reveal others. But enough are here given to call attention to the fact that recovery is regarded by many as occasionally occurring.

A. E. Roussel: A woman, following a miscarriage, had a foul uterine discharge, then continued fever with occasional spells of subnormal temperature, chilliness, sweats, pains in various parts of the body, great emaciation. The heart became tumultuous, its area of dullness increased, systolic, apical and basic murmurs appeared; the pulse was often irregular and as high as 148; there was a dull pain and feeling of oppression in the region of the heart. The red corpuscles were reduced to 3,000,000; hemoglobin was 35 per cent; leucocytes 26,000; streptococci were present in the blood; and several subcutaneous abscesses, containing streptococci, formed. After twelve weeks the patient recovered. Examination six months later showed a gain of twenty-five pounds in weight, freedom from fever, but there were cardiac hypertrophy and persistence of endocardial murmurs. Here was a case of puerperal sepsis with valvular localization, and symptoms commonly regarded as those of the malignant or ulcerative variety, yet recovery ensued.

Dreschfeld² tells of a patient in whom, after a severe bodily strain, signs of aortic leakage were found—evidently a rupture of the aortic valves. Sometime later the patient had symptoms of malignant endocarditis, repeated chills, intermittent and high temperature (105°), and eventually embolism of the posterior tibial artery. The febrile symptoms subsided after a time, the patient regained his strength, and the diastolic murmur of the aortic regurgitation remained. In this case the valves, damaged by rupture, furnished the suitable nidus—the *locus minoris resistentiae*—for the development of micro-organisms that in some way gained entrance to the blood.

Sansom³ treated a woman for what he believed was acute ulcerative endocarditis affecting the mitral and aortic valves. She recovered, with the signs, however, of mitral and aortic regurgitation. Ten months later she suffered from symptoms similar to those he had observed in

her first attack. She died and the autopsy revealed ulcerative endocarditis. Sansom regards the first attack as one of ulcerative endocarditis with temporary recovery.

Rosenbach⁴ says that mycotic or malignant endocarditis, like any other form of sepsis, is capable—though unfortunately only rarely—of completely healing, often in an entirely unexpected manner. He cites the case of a child that with joint and cardiac affections had complete recovery so far as the joint and heart were concerned, but lost the eye through an ophthalmia, an evidence of the malignant, microbic nature of the trouble.

Fraentzel⁵ saw malignant endocarditis develop in two cases of severe uterine phlebitis. The women were both living, the one 22 years, the other 11 years, after the occurrence of the endocarditis, though with slight valvular defects. He also saw two cases of uncomplicated primary malignant endocarditis in which the chills gradually ceased and there finally remained nothing but a vitium cordis. One of these patients died three years later of the mechanical effects of regurgitation.

Dr. N. S. Davis, Jr.⁶ Male twenty-five years, non-alcoholic. Headache and dyspeptic symptoms, with some dyspnea on exertion for about a year. Physical examination negative on admission to the hospital. For one week temperature and pulse normal. Then temperature like typhoid, endocardial murmur, irregular chills, phlebitis of vein in leg, anemia, emaciation; gradual recovery. Credé ointment used. Malaria excluded by examination of blood. No rose spots of typhoid, no Widal, no tympany. Regarded by Dr. Davis as ulcerative endocarditis with recovery.

T. L. Coley.⁷ Male twenty-six years old, rheumatism at nine years. Never quite so well after, suffering somewhat from dyspnea and palpitation. For six weeks furuncles, a possible source of the infective trouble. Had precordial distress, syncope, with rigors. Serous diarrhea. Became weak and emaciated. The heart showed great enlargement, and typical signs of aortic regurgitation, including Corrigan pulse. Also a double murmur at the apex and accentuated pulmonary tone. A pericardial friction rub was heard. Palpable spleen. Repeated chills, fever and drenching sweats; morning temperature subnormal. Irritable stomach. Marked secondary anemia, reds 2,100,000, hemoglobin 26 per cent., whites 7,200. No organisms detected in blood (four examinations). Urine albuminous, twice with blood; epithelial casts. At times muttering delirium. In bed from November 15, 1895, to May 20, 1896. In August, 1896, had regained weight and was able to do light work. Physical signs of mitral and aortic lesions.

Warren Coleman.⁸ Female, aged twenty-three years, in previous good health. Vaccination two months before followed by extensive cellulitis and axillary adenitis. Weakness, fever,

pains about joints and in three days areas like erythema nodosum. Chills and sweats on many occasions. Septic appearance; anemia, continued fever up to 103°. Heart showed mitral murmur with accentuated pulmonic. Right heart increased in size during illness. Aortic roughening and murmur developed. Pulse grew intermittent and irregular, vessels of neck pulsated visibly. In six weeks improvement. Examination of chest two and a half years after showed no murmurs and very little increase in size. Previous to the fever the heart had been examined and found normal.

Edmund Cantley.⁹ Male, twenty-four years old, good previous history. For three weeks nausea, weakness, slight chills and fever, headache, pains especially in joints. Spleen palpable. Rigors at irregular intervals, sometimes two in a day. Temperature high. A blowing systolic murmur at the apex and a more marked systolic murmur at the lower end of the sternum. After a prolonged course, with numerous chills, fever and sweating, with weakness and emaciation, there was gradual improvement and he was discharged in good condition eight months from the commencement of his illness. The murmur at the apex finally disappeared, but the one to the left of the lower end of the sternum still continued to be heard.

J. W. Washburne.¹⁰ Female, aged twenty years. Uneventful personal history. Pains in joints, headache, shivering. Heart, lungs and urine normal and no external evidence of disease of the joints. Irregular, intermittent pyrexia. Temperature at times normal, at times 102°-105°. Rigors and sweats. Slight leucocytosis and reduction in hemoglobin and red corpuscles. A distinct diastolic bruit developed, best heard on the left side of the sternum at the third intercostal space. Improvement followed the use of antistreptococcic serum, altogether 1030 cc. being given.

Pye-Smith,¹¹ at a meeting of the Hunterian Society, reported a case in which emboli had been observed in various arteries forming aneurysms. This case, regarded by him as ulcerative endocarditis, recovered.

Margaret Pease.¹² Female, sixteen years old. Palpitation, dyspnea, aching of joints, rashes, loud mitral systolic murmur and faint aortic diastolic. Murmurs changed in character; a presystolic apical murmur appeared. Pericardial and pleural frictions. Spleen palpable. Temperature high and very irregular. At time of discharge (three months) was well, except for aortic and mitral regurgitation. Antistreptococcus serum employed.

Albert Woldert.¹³ Female, nine years old. Complained of pain in ankle and knee which subsided in a few days. Loud, rough systolic murmur was heard over heart. Afterwards, chilly sensations with high and irregular fever, with sweating; anemia was profound. "In many respects it resembled a case of malignant endocar-

ditis, but the child recovered, which argued against this view."

Dr. Sainsbury.¹⁴ Patient male, aged thirteen years, admitted to hospital June 22, 1896, complaining of pain in the chest and heart, which first began June 6. Sleepless, could not lie down; cough, weak, feverish, and later, delirious at night. No history of rheumatism or chorea. As a baby had pertussis and measles. Temperature on admission 103.2°. Apex beat in fifth interspace, four inches to the left of midsternal line. Dulness from first left intercostal space to right border of sternum. Thrill and double murmur at apex. Some impairment of breath sounds over both bases behind and crepitation over whole right side of back. Liver and spleen not palpable. Urine negative. June 24, violent delirium at night. Temperature 100-101°. No bacteria found in blood June 25. Marked dulness over left lung behind and increase of vocal fremitus. Sputum rusty, no rigor. June 26, symmetrical erythematous rash appeared on buttocks spreading to rest of body. This lasted five days. July 1, streptococci found in the blood. July 20, temperature 102°. Cardiac dulness increasing. July 28, temperature 104°. Cough, vomiting, bloody sputum. No rigor. Spleen palpable. Abdominal tenderness. Emaciation. Use of antistreptococcic serum begun. August 31, patient up and around, feeling much better. Cardiac dulness normal. September 1, another injection followed by temperature 102° and local symptoms. September 14, patient left hospital.

L. LaVastine.¹⁵ Bacteriologic examination of blood showed presence of numerous streptococci and few staphylococci. The use of antistreptococcic serum was followed by improvement. Repeated doses by recovery.

Henry McClure.¹⁶ Female, aged twenty-six years, complained first of pain referred to back of chest and shoulders. Temperature rose to 103° and distinct murmur appeared over aortic cartilage. Patient became delirious, had involuntary evacuations, became slightly jaundiced, had a rapid pulse, an irregular temperature, at times as high as 105°, and in about two weeks, several rigors. The aortic murmur became loud and harsh and was carried well up into the vessels of the neck. Lungs negative. Slight albuminuria. Temperature normal for twenty-four hours for the first time at end of sixty-second day. Recovery with normal heart sounds at end of six months.

McClure's second case was a man aged twenty years, who with dysenteric symptoms developed muscular and joint pains, fever and a well marked mitral murmur. A *phlegmasia alba dolens* appeared in the left leg. After two months, recovery with normal heart findings.

Sir R. Douglas Powell.¹⁷ Patient, male, twenty-one years old. Had slight defect at aortic valve. Given to violent exercise. On May 15 he dined out with a friend and was taken ill with vomiting, faintness, fever 102° and general

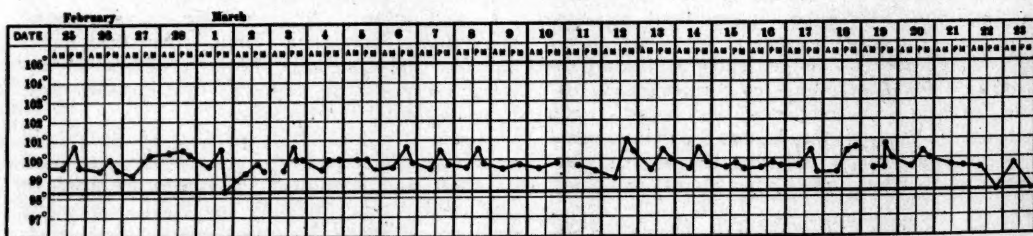
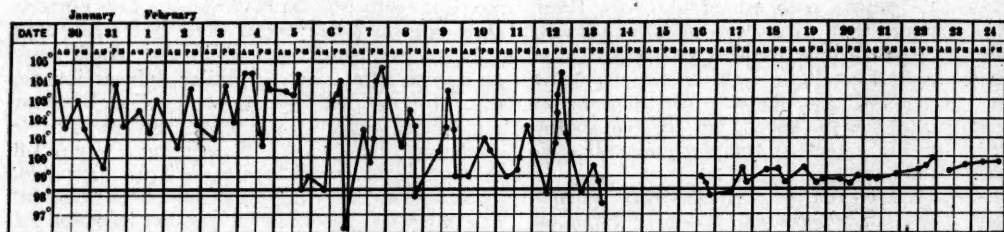
malaise. Cardiac murmur, aortic regurgitant in character. Temperature continued to rise for four days. No rheumatic symptoms. On eighth day had chill. Temperature which had been ranging from 100°-102° mounted to 105°. In four days had another chill, temperature 105°. Sometimes he had two chills in one day. With chills sometimes had sharp pain in region of spleen. The latter was palpable. Aortic murmur marked; a rough, mainly systolic, murmur over left auricle. Yeast injected from July 1 to September 1. Cardiac dulness increased upward and to right. Acute right pleurisy with effusion developed. Rigors now prolonged to intervals of six or seven days. Patient discharged September 1, and was seen in October; has been well since.

J. Mitchell Clarke:¹⁸ Female, twenty-two years old. Four years before, muscular rheuma-

two cases with all the symptoms of malignant endocarditis. One, a woman, after her confinement developed symptoms of endocarditis and after three months she was apparently cured, the heart murmur having entirely disappeared. Also refers to another patient who presented "every sign of the disease," and yet afterwards was in excellent health and remained so for many months.

Chas. G. Stockton,²⁰ in his remarks on ulcerative endocarditis, recalls a case following vulvar abscess and accompanied by septic inflammation of the neck and right hand that went on to recovery.

Whitehead and Syers:²¹ Male, aged 35 years. After earache, a chill, some fever and a distinct systolic murmur in the aortic area. Recurring rigors. Parotid gland became swollen. Temperature subnormal in morning, 105° in evening.



tism and pleurisy with effusion. Admitted for dyspnea, precordial pains, slight swelling of ankles. Had enlarged heart and systolic murmur at apex. Temperature for three weeks 100° to 101°. Then rigor, bronchopneumonia, higher temperature for four days. Temperature normal for a week and then rose in irregular fashion, being, as a rule, normal or subnormal in the morning and from 100° to 104° in the evening. A new systolic murmur appeared in the pulmonary area and a diastolic murmur in the aortic region. The pulse became weak and collapsing. The murmurs varied in intensity from day to day; the heart increased in size. The fever lasted for six weeks. The patient was very weak and anemic but recovered, being treated with antistreptococcic serum, though no organisms were found in the blood. At the time of discharge no systolic murmur could be heard.

W. Hale White,¹⁹ during his lecture, refers to

Murmur increased in intensity; patient very weak and was in a desperate condition. Precordial friction. Dulness over base of left lung. Temperature normal after ten weeks. Loud systolic, aortic murmur persisted at time of discharge of patient.

I have seen a child of three years with a pneumococcic septicemia starting with throat symptoms—a nearly pure culture being obtained from this locality—causing otitis media and bronchopneumonia. At the end of ten days of serious illness a murmur could be heard at the apex with systole; it varied in quality from day to day. With the appearance of the murmur there were an irregular temperature, a few chills with the temperature jumping from subnormal to 105°, two crops of petechiae, a splenic infarction, and a long-drawn-out convalescence with persistent slight temperature for weeks, but with ultimate recovery of perfect health; yet with the signs

persisting, even two years later, of a mitral regurgitation, muscular compensation being perfect. A five-year-old brother of this boy had at nearly the same time a similar sore throat with abundant pneumococci, an otitis media and a pleurisy. A sister, one year old, had a light bronchitis.

But anatomical proof that ulcerative endocarditis may heal is not lacking. At times there are found by the side of the characteristic acute lesions the evidences of scarring, the destructive process being replaced by a reparative one. Von Dusch remarks:²² "That under favorable circumstances even the ulcerative endocarditis is capable of at least partially healing is shown by the perforations that have become converted into scarred, callous passages and communications between separate parts of the heart." Perhaps no observations in this line are more suggestive and instructive than those of Harbitz, of Christiania.²³ He divides the acute endocarditides into two classes, the toxic, of which the rheumatic form is the type, and the infectious. The latter class is subdivided into two sub-classes. In the one the endocarditis is clearly secondary to some recognizable suppurative process in some other part of the body; it is not only infectious, but is infecting, its emboli commonly producing suppuration; the symptoms are fulminant, malignant, pyemic; death almost invariably results and little or no evidence of an attempt at repair is found postmortem. The staphylococcus is the organism commonly present.

The other sub-class of the infectious form is generally caused by the streptococcus or the pneumococcus, though the primary infection atrium may escape detection. Irregular or slight fever, chills, rheumatoid pains, anemia, hemorrhagic nephritis, non-suppurating embolic phenomena are present. The symptoms may last for weeks or months. The valves and mural endocardium show smaller or larger, irregular warty or polypoid excrescences, that are often rather firm, adherent at the base, at times showing calcification. There is often a large amount of fibrillary connective tissue with few nuclei. At times also aneurysmal dilatation of the valves is seen. "On the whole these endocarditides give the impression that the process is old and in the stage of organization; it is tending toward healing." The more extensive destructive changes, ulceration, abscess, necrotic foci in the neighboring valve tissue are generally slight or lacking. Bacteria (streptococci or pneumococci) are found in cover slips, sections, cultures and by inoculation. The condition is clearly an infectious one. Closely related to this form is one in which with similar anatomical findings the micro-organisms can be detected in sections, though in their reactions to stains, in their growth on culture media and in the bodies of inoculated animals, they give proof of a low degree of vitality and virulence or of absolute death. In other words, the process has healed and the patient's death has been due to mechanical and not septic causes. Harbitz²⁴ has seen ten such cases.

Dr. L. Hektoen has kindly furnished me with specimens, drawings and descriptions of the hearts from three cases where healing has partially taken place and yet where the appearances are such as to warrant one in saying the process was distinctly infectious, if not ulcerative.

Autopsy Record, No. 987 (postmortem by Dr. H. G. Wells). Anatomical Diagnosis: Fibrous pericarditis; acute and chronic aortic and mitral endocarditis; healing perforation of aortic valve; vegetative aortitis; hypertrophy and dilatation of the heart; right hydrothorax and hydroperitoneum; chronic passive congestion of the lungs, liver and spleen; old and recent infarcts of spleen and kidney; chronic nephritis; healed tuberculosis of lungs, pleura and mediastinal glands; double inguinal hernia; right hydrocele; atrophy of testes; anomalous location of gall-bladder; tænia saginata.

Abstract from the record: There is complete fibrous obliteration of the pericardial cavity. The aortic valves are incompetent to the water test. The valve cusps are thick and sclerotic with greyish vegetations upon the ventricular aspect. The posterior cusp has an interesting fenestration running a little below the free margin from the corpus arantii to the lateral attachment of the valve. The margins of this fenestration are rounded and for the most part smooth except near the corpus where are typical vegetations. The upper margin is cord-like and about 2-4 mm. in diameter. The opening is about 1 cm. in length. There are similar vegetations upon the upper surface of the anterior mitral valve, the posterior being sclerotic. The heart weighs 600 grams. There are a few vegetations upon the aortic intima just above the aortic valves.

The endocardial vegetations, when examined microscopically, consist mostly of fibrin with accumulations of mononuclear cells and large masses resembling coecal accumulations. No bacteriologic examination.

Abstract of History:

H. H. Male, age twenty-four, laborer, entered the hospital with a history of chills and fever



Case 987.

some months ago and cough and shortness of breath for about six weeks. The heart was enlarged with systolic murmur at apex and rough

diastolic murmur over the midsternum. The liver and spleen both enlarged. Capillary pulsation; water-hammer pulse; prominent superficial veins. Temperature ranged from 98.6 to 102°. Sputum and urine normal.

Case No. 903 (postmortem by Dr. T. R. Crowder). Anatomical diagnosis: Healed ulcerative (perforating) endocarditis; hypertrophy and dilatation of the heart; passive congestion of the lungs, liver, spleen and kidneys; left hydrothorax, hydropericardium, ascites, anasarca; arteriosclerosis; miliary gummas of spleen and liver. Abstract from record: The pericardium is smooth. The aortic valves are incompetent to the water test. They are thick, fibrous, somewhat retracted, with rounded margins. The ventricular surfaces are somewhat roughened and finely granular, especially the anterior leaflet, which contains a rounded opening, 7 mm. in horizontal and 5 mm. in transverse diameter, situated below the line of closure and extending to



Case 903.

the base and right margin. The edges of this opening are smooth and rounded. The myocardium is firm, brown, with here and there whitish scars, especially in the papillary muscles. The heart weighs 450 grams. There are large, somewhat gelatinous, raised areas in the beginning of the aorta, especially about the points of joint attachment of the aortic valves. The kidneys weigh 350 grams together; the surface is smooth, cortex reddish gray, thicker than normal. Staphylococcus pyogenes aureus was isolated from the spleen and the lung, staphylococcus albus from the heart's blood and bacillus coli from the liver.

History: P. N. Man, aged fifty-one years, ad-years, gave a history of having been sick for two months, beginning with a cold followed by swelling of the abdomen and of the ankles. He soon became short of breath and eventually had to sit up nights. He never expectorated blood. While there was palpitation of the heart, he had never had pain. Had syphilis six years ago; small-pox five years ago. Examination showed enlarge-

ment of the heart, roughening of the first sound at the apex, and a loud diastolic murmur to the left of the sternum; Corrigan pulse; scrotum, penis and lower extremities edematous; fluid in the abdomen and chest. Temperature normal, pulse 100 to 140. The urine contained a trace of albumin, hyaline, granular and epithelial casts; 400 cc. per diem.

Case No. 1089 (postmortem by Dr. Wells). Anatomical diagnosis: Healed ulcerative (perforating) endocarditis of the aortic valves; hypertrophy and dilatation of the heart; sclerosis of aorta and coronary arteries; anasarca, hydroperitoneum, hydrothorax, hydropericardium; compression collapse of both lungs; bronchitis; passive congestion and cirrhosis of liver and spleen; healed splenic infarcts; chronic nephritis and healed renal infarct. Abstract from record: The pericardium is smooth. The aortic valves are incompetent to the water test, pulmonary competent. The endocardium of the right heart is smooth. The mitral valves are somewhat thick and fibrous. The aortic valves are greatly deformed by irregular, wart-like masses of fibrous tissue and of rather soft, but not crumbling, white tissue in which are fine calcareous granules. The left posterior cusp shows a large circular perforation about 1 cm. in diameter; the superior margin consists of an irregularly nodular band 4x8 mm., while the inferior is thin and perfectly smooth. The aorta just above this perforation shows a few small warty, rather firm, outgrowths from the intima. The heart, especially the left ventricle, is much hypertrophied and dilated and weighs 650 grams. The myocardium is firm, somewhat mottled; fibrous in the apices of the papillary muscles. There is considerable dilatation of the beginning of the aorta with calcified spots in the thoracic part. The spleen is large (22x12x5 cm.), purplish in color, rather firm; the surface shows depressed, puckered, yellowish white scars, the largest 3½x12 cm.; malpighian bodies indistinct. The liver weighs 2250 grams, is rather firm, mottled, rather rough on the cut surface. After rapidly washing the surface of the outgrowths upon the aortic valves with 1-1000 solution of bichloride of mercury and then rinsing thoroughly and repeatedly in sterile water, pieces were ground up in sterile water (1-2 cm.) from which several bouillon tubes were inoculated with three to four drops each. Several glycerine-agar and blood-serum smears were also made. All tubes remained sterile and microbes were not found in the coverslips. Cultures from the heart's blood, the liver and spleen remained sterile. Streptococcus pyogenes was isolated from the lungs.

History: P. N. Man, aged fifty-one years, admitted September 17, died December 11, 1901. He gave a history of cough for two months with some expectoration, but not of blood. For two weeks, there has been dyspnea, mostly at night, with coincident swelling of the feet. Frequent urination since one year. Never sick before. Examination showed a double

murmur at the base and a systolic murmur at the apex; diastolic pulsation of the veins in the neck; enlargement of the area of cardiac dulness. The liver extended three fingers breadth below the costal arch; distinctly enlarged spleen; fluid in the abdomen and edema of the extremities. No temperature; pulse 70 to 90. The urine contained a trace of albumin, few granular and hyaline casts; 1800 cc. in 24 hours. Blood showed 2,710,000 reds, 3200 whites and 40 per cent. hemoglobin. On October 5 he spat up a good deal of blood.



Case 1089.

If recovery is possible it should make one more guarded as to prognosis and particularly in those cases where the infectious agent is the pneumococcus or the streptococcus. It will be noted that in many of the cases reported as cures, where bacteria have been found in the blood, they have been streptococci or the treatment has been by streptococcus serum. It should be the aim of the physician to strive to determine the particular microbe that is at work in a given case because of the value of such knowledge in making up a prognosis and to some extent because of its assistance in treatment. It is possible that some day we may be able to differentiate between the clinical picture presented by an endocarditis due to the streptococcus and the staphylococcus. Some serum test or some hemolytic reaction may be found of practical application. At least the blood can be examined bacteriologically and this will often yield positive results. If one believes in the possibility of recovery, one will be more persistent in treatment. Rest, proper hygiene, nourishing food, iron and arsenic as blood-makers, will be more earnestly insisted upon. And some of the supposedly specific remedies such as the serums, or the Cr  d   soluble salts of silver can be employed, as has already been done by several observers with what they believe to be beneficial effect.

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CHARACTERISTICS OF PULMONARY VALVE AFFECTIONS, WITH CASES.

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OF all cardiac valves the pulmonary is least often affected. Very exceptionally it is a single lesion. Sterling (Gibson's Dis. of the Heart, London, 1898) has not recorded a single case. Fortunately I have brief notes of one.

In association with other valvular diseases, pulmonary affections occur in the ratio of 1 to about 10 per cent. Sperling puts it at 4 per cent. Insufficiency is the form commonly seen in adult life; stenosis in fetal life or infancy.

Pulmonary valve diseases occurring in adult life, however, are usually consecutive to endocarditis of other valves, or arteriosclerosis, the ratio being according to my tables six in a total of 177 lesions verified by postmortems. In my office cases the ratio was put at 3 per cent. and in fifty taken from my clinic by myself and assistants, pulmonary insufficiency was at the bottom of the list. Walsh (Dis. of the Heart, London, 1873, p. 105) from his list makes it occupy the sixth place in a total of seven varieties of lesions. But his clinical notes, not to any very large extent confirmed by pathological data, are interesting rather than convincing. Five of the cases I now record are taken from my postmortem records as former pathologist to the St. Luke's and the Presbyterian hospitals. One was furnished me by the Babies' Hospital. Temporary insufficiency is doubtless of common occurrence. For a slight diastolic murmur can be produced over the second or third left intercostal space after the breath has been held for a brief space, when respiration is again commenced. Chronic insufficiency, however, is not common. Gerhardt in 1890 (Charit   Annalen, XVII, p. 255) had only collected twenty-nine cases that were verified by postmortems, and Bari   a year later (Arch. Gen. de Paris, 1891, Vol. I, p. 650 and Vol. II, p. 30 and 183) fifty-eight similarly supported by postmortems from the years 1831 to 1874. Pitt, however, has carried the number up to ninety-

nine* (Alburt's System, 1899), while, as already said, I am able to add six new cases, brief notes of which I publish in the present paper.

Case I.—Phthisis; fatty heart, chronic parenchymatous nephritis; tricuspid and pulmonary insufficiency (relative). A woman of forty-two years was admitted to Hospital Jan. 23, 1884, with the usual signs of tuberculous phthisis, which were cough, dyspnea, profuse greenish-yellow sputum, night sweats and cyanosis. Pulse reached 104, temperature 102° F. She died of heart failure about two weeks later. At the autopsy all the heart cavities were found dilated, the walls thinned and apparently fatty. The aortic and mitral valves were sufficient, the tricuspid markedly insufficient, the pulmonary less so. The cause of death was put down to fatty heart and chronic parenchymatous nephritis. The tricuspid and pulmonary insufficiency were due to the dilated right heart, such as occurs in the fatty heart of phthisis. The attention of the physicians appears to have been directed to the lungs rather than the heart, so that the lesions of the right heart escaped notice, as very frequently happens.

Case II.—Aortic and mitral endocarditis; tricuspid and pulmonary insufficiency (relative). A widow of forty-eight years was admitted to Hospital June 27, 1885. The patient had enjoyed fair health until three months previously, when she was taken with cough, dyspnea, and night sweats. On examination the apex was found in the sixth space $4\frac{1}{2}$ inches from the median line. Loud systolic murmur at the apex, conveyed to the left and even to the angle of the scapula. A loud systolic murmur heard over the second and third right interspaces, propagated up the great vessels. Aortic second sound inaudible and no aortic diastolic murmur appreciable. Pulse 128, irregular in force and frequency. Later, some enlargement of liver. Mental disturbance. Anteriorly, respiratory murmur rough; sibilant and sonorous râles. Still later ascites developed. The patient died of heart failure. At the postmortem examination the heart was found enlarged, weighing eighteen ounces. Cavities dilated. Vegetations on aortic and mitral causing obstructions at both orifices. Pulmonary and tricuspid valves insufficient from dilatation of the right ventricle. The pulmonary and tricuspid insufficiency were not recognized during life.

Case III.—Arteriosclerosis; tricuspid insufficiency and relative pulmonary insufficiency, due to dilatation of the pulmonary artery. A sailor of fifty-six years was admitted to Hospital on November 23, 1886, for cough, dyspnea and bloody expectoration which had persisted for a month. Syphilitic history of thirty years' standing. On examination he was found to have general edema and emphysema. Visible pulsations in brachial, radial and ulnar arteries; venous pulsation in jugular veins. Urine sp. gr. 1002 albumin 33 per cent. Granular and hyaline

casts. Fairly loud systolic murmur heard over the liver and at lower end of sternum. Diagnosis of tricuspid regurgitation made. Pulse hard as a telegraph wire. Cheyne-Stokes respiration. Relief was afforded by the nitrites. Patient died of edema of the lungs. At the postmortem examination the pericardial sac was found to contain eighteen ounces of clear serum. Heart weighed twenty-seven ounces and was hypertrophied, especially the left ventricle; the right was thinned and dilated. Aortic and mitral valves sufficient. Commencing aneurismal dilatation of the aorta. Pulmonary orifice dilated and insufficient. Liver enlarged and of a dark color. Diffuse nephritis.

Case IV.—Aortic and pulmonary insufficiency, due to adhesive pericarditis, etc. A man of thirty-four, from Ireland, blacksmith. Admitted to Hospital on September 18, 1885. In the preceding January he had a cough and six weeks previously hemoptysis, losing about $1\frac{1}{2}$ ounces of blood. Had suffered from acute inflammatory rheumatism. On examination the heart's apex was found in the fifth space, $2\frac{1}{2}$ inches from the median line. Soft systolic murmur over the aortic and also over the pulmonary area with accentuation of the second sound. Dulness with cavernous breathing over second and third left interspaces. Below, amphoric breathing. At right apex some signs of softening.

Patient died of cardiac failure October 3. At postmortem examination it was found that the heart weighed only twelve ounces. The pericardial sac had been obliterated by an extensive adhesive pericarditis. The heart substance was soft and flabby; walls thinned and cavities dilated. Slight fatty change in mitral leaflets. Aortic and pulmonary valves seat of numerous small perforations; and it was held at the autopsy that, owing to the relaxed condition of the walls they must have been to some extent insufficient. Cavities in both apices. Parenchymatous nephritis, etc. A diagnosis of aortic disease had been made. This was not a satisfactory case from several points of view, but it is none the less on record as one of aortic and pulmonary insufficiency, and I therefore record it. And it seems as if this diagnosis accords best with the auscultatory phenomena and the postmortem findings.

Pinhole openings in the valves are sometimes found as the result of congenital malformation. They never cause murmurs, but good sized openings and clefts may cause them. The pulmonary area is, of all valvular areas, the most likely to lead to error for the reason among others that it is so close to the aortic. In fact, as already stated, aortic murmurs may sometimes be heard best over the pulmonary area and vice versa. Or they may be best heard above the second cartilage, or over the sternum opposite to it. But there are murmurs heard over the pulmonary area that so far as we know are quite independent of the valves, being due to anemia, change of position, etc., etc. Hence the danger of putting too much faith in auscultatory signs at this point.

Congenital insufficiency of the tricuspid is apt

* Of these forty-four were taken from the pathological records of Guy's Hospital.

to be associated with pulmonary stenosis and insufficiency. Insufficiency may be found at any age. Barié found it between three and seventy-five in acquired cases. It does not seem to have any preference in the matter of sex.

According to Pitt, whose statistics are based on the largest number of tabulated cases, the chief cause given was ulcerative endocarditis, while next in importance were pulmonary stenosis, aortic aneurism, pulmonary dilatation, or some abnormality in the formation of the valves. In this connection it may be stated that Barié found dilatation of the pulmonary artery in sixteen, or 27 per cent. Among the causes given by Pitt for the ulcerative form were gonorrhea, puerperal fever, pyemia and pneumonia; while associated with the abnormalities were patent ventricular septa and patent ducti arteriosi. Stenosis causing insufficiency may also be due to adhesion of leaflets.

The congenital form, which is pretty certain to be associated with stenosis and cardiac anomalies, will be readily recognized by a general cyanosis of intense character, clubbed fingers and toes and an abnormal development of the chest. In these cases the murmur is soft because the blood stream lacks vigor and there are no ulcerations. In the acquired form there are apt to be (together with cyanosis and dyspnea) signs of defective nutrition as shown in my cases, for all (four) had chronic pulmonary disease with cough, dyspnea, hemoptysis, and two night sweats.

The most important physical signs are: 1. Displacement of the apex. 2. Diastolic thrill in the second or third left space (in 20 per cent. Barié) from the edge of the sternum to a distance of one inch to the left of it, conducted down the left edge of the sternum (Boyd)*. 3. Double murmur (in about 25 per cent.). 4. Diastolic bruit intensified by inspiration. 5. Implication of the lungs. 6. Murmur intensified in the sitting position. 7. When a long breath is taken the vesicular murmur is jerky. 8. Hemoptysis. 9. Dyspnea. 10. Usually, but not always, hypertrophy of the right ventricle. 11. Epigastric pulsation. The pulse has no distinctive character.

Often there will be no bruit at all; we must, however, discriminate against aortic disease (insufficiency) by the absence of hypertrophy of the left ventricle by the Corrigan pulse. The murmur should be louder than an aortic.

According to Barié, the diagnosis was made in but thirteen out of fifty-eight cases (22 per cent.). According to Pitt, the diagnosis was made in more than half his septic cases. The ulcerative process seems to be necessary to cause murmurs. However, the diagnosis would certainly be made more frequently if physicians would be systematic in their examination of the heart, whenever there was a suspicion of cardiac disease, and make notes of all the murmurs at the four valves.

The prognosis is unfavorable in congenital disease. Acquired cases have been known to live to seventy-five. My four acquired cases reached

ages between thirty-four and fifty-six; for after all, effective compensation may be established by hypertrophy of the right heart, just as in tricuspid regurgitation, with which it is so generally associated. And because general malnutrition, and infections like gonorrhea, measles and syphilis, and phthisis, are potent factors, the success or lack of it in treating these maladies must largely influence the expectation of life. So that in the matter of prophylaxis and treatment infections must be avoided and combated, and special care must be given to cases of pulmonary implication.

When there is sepsis from infection, the use of the newer antistreptococcus (and possibly in lung cases), antistreptococcus sera offer hopes of cure, that are certainly worthy of consideration, if used in conjunction with other sound symptomatic measures. The lung affection, of course, should have the first attention.

Pulmonary stenosis or obstruction is one of the most frequent of the many congenital cardiac anomalies that defy classification owing to their varieties. Usually this valve defect is associated with abnormalities of the large vessels as well; with imperfections of the interauricular or inter-ventricular septa, or the valve leaflets. The two most common anomalies are patency of the foramen ovale and of the septum between the ventricles.

Usually the valve defects are curious rather than dangerous to life, for though they may be irregular in number or shape, or the leaflets may be improperly implanted, they often do their work satisfactorily. But when the valves are not separated, are twisted or missing, whether from imperfect or arrested development or prenatal inflammation, so that the caliber of the outlet is affected, the expectation of life will be seriously altered. Simple thickening of the leaflets may be due to intra-uterine disease, or senile change. If the function of the valve is not interfered with, it may not be one of importance; but endocarditis of the pulmonary valve is a very serious matter, as it easily destroys these segments, which are extremely delicate and so may produce permanent insufficiency.

One of the most common of the associated extracardiac anomalies is the persistence after birth of the ductus arteriosus, which in fetal life connects the pulmonary artery with the descending aorta.

And yet we must recognize that in a measure one defect compensates another. If, for example, there should happen to be complete closure of the pulmonary artery, the patency of the ductus arteriosus would be a compensatory defect, permitting the aorta through the duct to supply the lungs with blood. And so, if the tricuspid happened to be closed, the patent foramen ovale would allow the blood from the right auricle to pass to the left auricle. Among other minor anomalies we also find, occasionally, strictures either of the pulmonary artery or one of its branches, or narrowing of the infundibulum, which lies be-

* Scott, Med. and Surg. Journal, 1889, Vol. IV., p. 121.

neath the pulmonary valves. There are already to be found on record a number of cases presenting these and other anomalies. In fact the pathological department of any hospital caring for infants or young children would naturally have frequent references to these defects. This is true of the Babies' Hospital of this city with which I have been connected for fifteen years. In a comparatively small number stenosis (obstruction) is acquired. What the ratio between these congenital and acquired stenoses is I do not know. It is a difficult matter to determine, even with the complete clinical and postmortem records in view. Many of the older reports do not make it plain. In fact, it was not attempted until the time of Constantine Paul in 1871. Besides, in many instances an acquired lesion like endocarditis has been engrafted on a congenital malformation.

As a single congenital lesion pulmonary stenosis is a great rarity. Fortunately, through the assistance of Dr. Wallstein, Pathologist of the Babies' Hospital, I am able to record one case, which I have already alluded to.

Case V.—An infant of five months died at the hospital after the following symptoms had been noted: A diffuse apex beat, a systolic murmur at the base heard with greatest intensity at the left of the sternum, and transmitted up the neck on both sides. Diagnosis not made. No cyanosis. At the autopsy the pulmonary orifice was found one-third smaller than normal. No other cardiac lesion.

It will be noted from this case that stenosis of the pulmonary does not necessarily produce cyanosis. Pitt (Albutt's System, Vol. VII, p. 9) has collected fourteen cases of acquired stenosis. I have collected and verified fifteen, yet have failed to get access to fully one-half of the literature on this subject. The references to my cases I give here.

- ¹ Ebstein, *Deutsches Arch. f. klin. Med.* Bd. VII, p. 281.
- ² Peacock, *Lancet*, 1868, Vol. I.
- ³ Rindfleisch and Oberneier, *Deutsches Arch. f. klin. Med.*, Bd. V, p. 530.
- ⁴ Mayer and Oberneier, *Deutsches Arch. f. klin. Med.*, Bd. XXIV, p. 435.
- ⁵ Whitley, *Guy's Hosp. Repts.*, III, 1857, p. 255.
- ⁶ Whitley, *Guy's Hosp. Repts.*, III, 1857, p. 255.
- ⁷ Paget, *Med. Chir. Trans.*, 1844, p. 182.
- ⁸ Crudelli, *Riv. Clin. di Torino*, VII, 2 p. 37-68. Schmidt's *Jahrb.* 8, 1870.
- ⁹ Bertin, *Heart Diseases*, 1821.
- ¹⁰ Constantin Paul, *Soc. Med. de Hop. de Paris*, T. VIII.
- ¹¹ Schwalbe, *Virchow's Archiv*, Bd. 119, S. 2, p. 45, 1890.
- ¹² Schwalbe, *Virchow's Archiv*, Bd. 110, S. 2, p. 45, 1890.
- ¹³ Schwalbe, *Virchow's Archiv*, Bd. 110, S. 2, p. 45, 1890.
- ¹⁴ Wagner, *Archiv f. Heilk.*, 1866, S. 518.
- ¹⁵ Colberg, *Deutsches Archiv f. klin. Med.*, Bd. 5, p. 565.

I am inclined to think that the following instance was also one of temporary stenosis, caused by extracardiac pressure, relieved by evacuation of the abscess. Otherwise I have none in my postmortem records.

Case VI.—A groom, age twenty-eight years, was admitted to Hospital in July, 1883, with an abdominal tumor continuous with the liver and extending into the epigastric and right hyperchondriac regions. Palpable pulsation over the pulmonary area, extending up to and under the clavicle and attended with a soft systolic bruit.

No other signs of cardiac disease. In the following month two incisions were made into the tumor and three ounces of pus were removed each time. The man survived the operation three weeks, dying of progressive emaciation and sepsis. At the autopsy the liver was found to be greatly enlarged, weighing eighty-eight ounces. It apparently had compressed the lungs, both of which were unusually dry, the left especially, and by pressure had caused the same kind of temporary stenosis of the pulmonary artery as is sometimes seen when aneurisms of the aorta, by pressure, alter the caliber of the vessels from a circular to a crescentic form.

In congenital disease the cause must be laid to lack of development. In the acquired form infection, according to my tables, plays a most important rôle, the order of frequency being rheumatism, aneurism, syphilis, gonorrhea. Doubtless further researches into the etiology of this subject will enlarge the number of causes and perhaps may affect the ratio here given. Pitt in his fourteen cases found rheumatism a causal factor in eight, or 57 per cent.

In the matter of sex there is apparently no difference.

In symptomatology there is a wide difference between the congenital and the acquired forms.

In the former there is usually general cyanosis, though not always, as in the instance I have here given. But there is usually a lack of physical and mental development. The patient complains of headache and is somnolent, or has hebetude; is undersized, has a bulging chest and a protruding abdomen. There is defective development of the genitals with clubbed fingers and toes. The eyes may be prominent. But the physical signs are less trustworthy. The right ventricle is enlarged in complicated cases; both are enlarged when the left ventricle is called on for extra work. The murmur is systolic and usually loud, if there are vegetations; and it may be heard all over the precordial area, but its intensity is apt to be greatest over the pulmonary area, *i. e.*, the second left intercostal space, close to the sternum; and the murmur is continued up towards and sometimes under the clavicle. Exceptionally it may be best heard lower down. In one case* (Hun's) it was best heard at the fifth left sternoclavicular junction.

In acquired obstruction we should look for an antecedent infection and especially for venereal disease or rheumatism.

As distinguished from the congenital form there is in the acquired less often cyanosis, and there are none of the characteristics of arrested mental and physical development. But if there is cyanosis it is increased by coughing and there is dyspnea. The murmur is more definitely located than in the congenital form, because the force of the stream is undiminished by defects in the walls of the heart. It should be loud and rasping in the endocarditis forms. If the patient hold his breath it should

* Albany Med. Annals, pp. 57-60, 1897.

be somewhat fainter. The apex beat is apt to be forcible and diffuse, and there may be a thrill. The second pulmonary sound should be faint, but there may be insufficiency and a double murmur. The murmur is apt to be propagated from the middle of the base of the heart up toward the left shoulder as far as the clavicle. The point of greatest intensity is usually in the second left interspace. Usually there is an attendant pulmonary or bronchial disease of a purulent character.

When, as in the case I have given, the pulmonary stenosis is single, hypertrophy should be confined to the right heart. If for any reason the left heart has been called on for extra work it will naturally hypertrophy. There is nothing characteristic about the pulse. Some edema, even anasarca and albuminuria, may be expected toward the end.

The diagnosis is never easy. Even in the congenital forms pulmonary stenosis is, as a rule, as I have said, only one of many anomalies; two at least of them, viz.: the patency of the foramen ovale, and of the interventricular septum capable of producing in the one a diastolic, and the other a systolic murmur; and in infants it is hard to distinguish between the two. However, as all heart anomalies are apt to center about pulmonary stenosis, a bold guess will sometimes be rewarded by success. In acquired cases, even when they have been most carefully studied as to every auscultatory detail, the diagnosis has seldom been made. Paul and Mayer, however, have each recorded a successful antemortem diagnosis.

The prognosis is never good. Exceptionally, congenital cases have lived to forty; usually they die before the fourth year of life, of tuberculosis.

In the acquired form the prognosis is more favorable. One of Schwalbe's patients lived to be eighty-four, another to be sixty-eight, while Rindfleisch and Oberneier died at sixty-five. Usually, however, they do not survive the third decade.

It is well to remember that at the birth of these infants, after removing the mucus from the mouth and nostrils, the circulation should be stimulated by slapping of the surface. Artificial respiration by Sylvester's method, the author's or others; or the lungs may be inflated by the catheter introduced down the larynx. After the circulation has been established in this way, the infant should be kept in a warm, dry room. In general patients with this congenital malformation should live an uneventful life, in a warm, equable climate. They should have systematic exercises and their diet should be carefully regulated. Their methods of life should be such that they have no physical or mental strain. Matrimony should be sternly prohibited.

In the acquired form infections and rheumatic tendencies should be combated, and the cardiac symptoms should be met, as they arise, with appropriate treatment.

A BRIEF CONSIDERATION OF THE SCIENTIFIC TREATMENT OF A FEW OF THE DISEASES OF THE HEART.*

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WHEN a physician has discovered by a careful physical examination that he has a patient with a heart lesion, before beginning treatment he should convince himself that medicine which acts directly on the heart is absolutely necessary.

In the early years of his practice the young physician, by reason of the great stress that was placed upon the proper differential diagnosis of the various heart murmurs during his college course, is inclined to begin medical treatment at once upon the discovery of an adventitious heart sound. In point of fact it is often better to give no medicine for the heart lesion. In no instance in medicine is the old trite expression, "Nature is her own best physician," more true than in diseased conditions of the heart. The regurgitation caused by a leaky valve is met by compensatory hypertrophy; again the heart-wall thickens in response to increased work thrown upon it by reason of a stenosis. If the patient complains of great weakness and shows a rapid, small compressible pulse and has attacks of palpitation of the heart and fainting spells, he is suffering from myocardial weakness and Nature is demanding body rest, in order that she may restore herself.

It is to the condition of the myocardium that I wish particularly to call attention. When the myocardium is doing its work properly and fulfilling all the requirements of nature in a physiological way, that is, when the blood pressure is neither above nor below the normal, when the tissues are properly supplied with blood, no matter what heart murmurs are present, no medication is indicated. It is not then the presence of heart murmurs that indicates the necessity of heart medication, but rather the condition of the heart muscle and the inability of the heart to do its work properly. Even when we find a lowered blood pressure, and the characteristic symptoms of weak heart, be the condition due to a leak in one or more of the valves or to a weakened myocardium (from any of the numerous causes), rest in the recumbent position for a week or ten days, or longer if necessary, will often do all that the patient needs. We can thus hold in reserve for future use our heart tonics until Nature is no longer able to restore herself by rest.

We should remember that the heart muscle is apt to become involved and diseased when a patient is suffering from either endocarditis or pericarditis; we should be on the watch for myocarditis during an attack of rheumatism and should push the salicylates and the iodides (not of course, in doses sufficient to interfere with the stomach) with a view to prevent the disease from

* Read before the Northwest Medical Society, 1902.

spreading to the heart muscle. In cases of gonorrhea, pyogenic infection and influenza eliminative medication should be resorted to as promptly as possible to prevent heart involvement and the coal tar preparations (owing to their depressing effect upon the heart muscle) should be scrupulously avoided.

When we have one of the acute infectious diseases to treat we must try to prevent myocardial weakness from toxemia by directing our treatment to the disease causing the toxemia; if diphtheria we will lessen the poisoning by giving proper doses of diphtheritic antitoxin early; if due to scarlet fever or typhoid fever or pneumonia, we should use every possible means to prevent heart exhaustion by proper medication, stimulation and rest. We can also lessen the amount of poisoning to the myocardium by keeping the excretory organs active and by giving proper tonic treatment and carefully selected nutrients in addition to the specific treatment for the primary disease. We can also save the strength of the heart by absolute rest in bed after the disease has run its course until the heart has regained its strength. Much trouble has been occasioned in cases of influenza by patients refusing to rest in bed during and after the attacks. They have thrown too much work upon the heart at a time when the myocardium is weak and they have suffered for a long time afterwards from dyspnea, precordial pain, small and irregular pulse, a feeble impulse and weak sounds. All these conditions indicate myocardial weakness and could be readily avoided by absolute rest combined with cardiac stimulants like strychnine, caffeine, digitalis, and alcohol.

Too great stress cannot be put upon the importance of improving the general health of the patient with heart lesions by proper hygienic surroundings, by good nutritious food, and by the use of tonics to improve the appetite, digestion, and assimilation. The giving of iron in some assimilable form is advisable in order to enrich the blood. By pursuing this line of treatment we supply an improved blood to the heart muscle, as well as to the general muscular system; we nourish and strengthen the myocardium and make it able to fulfil its increased duties.

It is now generally conceded that the pneumogastric nerve is the trophic nerve of the heart and as digitalis stimulates the action of this nerve and favors increased blood supply to the heart, it stands out boldly as our best heart tonic. Under its influence the muscle increases in strength. Digitalis prolongs the diastole and increases ventricular systole, which again results in more blood going into the coronary arteries and circulating in the capillaries of the heart, thus bringing more nutrition to the heart muscle and carrying off the waste products promptly from it. Digitalis slows the rapid, weak heart, regulates the beats and thus saves the heart that is aimlessly trying to pump the blood by rapid, incompetent efforts to hungry, anxious peripheral tissues.

We should in these conditions institute rest at

the same time that we prescribe digitalis, or at least, we should insist that a patient (who has a weak heart muscle) should not overtax his physical strength. Signs of incompetency are cough, cyanosis, dyspnea, edema, etc. We should investigate the kidneys and the peripheral vascular system of such patients. The heart enlarges from a leak as well as from stenosis.

The heart may also become enlarged when no valvular or orificial lesion exists. This may be seen in hard trained athletes or in persons who are constantly doing heavy physical work. This is a natural physiological consequence and needs no particular medication or attention on the part of the physician. Again we may find an enlarged heart which is due to tissue changes of the muscle, such as fatty overgrowth, fatty degeneration or fatty infiltration followed by dilatation. These show the characteristic symptoms of weakened heart, namely, breathlessness on exertion, palpitation, dyspnea, quickened pulse, cold and clammy extremities, etc.

While the differential diagnosis in these conditions is very obscure yet the treatment in each individual case is indicated as much by the patient's general state of health as by his heart conditions. Such treatment should be along some such lines as these: (1) The cause of the degeneration should be removed if possible; (2) the patient's hygienic and dietetic treatment should receive due consideration, so as to improve his nutrition; (3) in some cases digitalis should be employed, especially if the patient shows signs of commencing dilatation; (4) in other cases (if anemic), hematinics with arsenic and strychnine are our best remedies: some of these cases do well under skilfully directed physical exercise and light gymnastics, increased or decreased according to the peculiar effect upon the patient.

If the patient is suffering from general obesity with cardiac enfeeblement, the method of treatment introduced by Oertel can be followed, which is briefly: (1) Reduction of the amount of liquid taken with the meals and during the intervals; frequent bathing (Turkish baths if practicable); (2) the diet is made up largely of proteids, and (3) exercise should be gradually increased from day to day.

The points which I wish to emphasize in this paper are:

(1) Each patient showing a heart lesion must be a study unto himself.

(2) No heart medicine is needed unless the myocardium is unable to do its work in a physiological way.

(3) The heart muscle should demand more consideration than the heart murmur.

(4) Rest is one of our best therapeutic agents.

(5) We should try by every possible means to prevent myocarditis in all diseases where this condition is apt to arise.

(6) After any severe diseased process we should insist upon the patient resting in bed long enough to allow the myocardium to be restored.

(7) We should improve the general nutrition

of our patients and restore the blood to a normal standard by the use of blood tonics.

(8) We should investigate the kidneys in all cases showing signs of cardiac incompetency.

(9) Physical exercise, light gymnastics and properly selected diet are valuable aids in the treatment of cardiac disease.

THE PATHOLOGY AND TREATMENT OF ENDO- AND PERICARDITIS.*

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INFLAMMATIONS of the pericardium differ but little in their pathology from similar changes in other serous membranes. The most common lesion of the pericardium found at the necropsy examination is an excessive amount of serous fluid in the pericardial sac, or that condition known as a moderate hydropericardium. In all conditions of malnutrition, the vessels of the pericardium lose their normal nutritive tone, and thus permit the escape of a larger amount of simple serous fluid into the pericardial sac than is normally the case. In a few instances we meet with a hydropericardium that is the result of more active changes in the vascular walls of the pericardium, then the hydropericardium becomes an active lesion and may call for positive treatment during life; in some instances the symptoms are so urgent as to suggest the possible necessity of aspirating the pericardial sac, as is so frequently done in connection with the pleural cavities. These large accumulations of serous fluid in the pericardial sac may be simply a part of a general anasarca, or they may be local in nature and due directly to inflammatory changes in the pericardium.

Another quite common condition of the pericardium found at the necropsy is the so-called "milk patch." It is a white glistening appearance of the pericardium, due to the formation of new connective tissues in or underneath the pericardial membrane. Patches of this kind vary in size from very small points to large and irregular masses. In the latter case they form smooth opaque patches of a pearly aspect, and as a rule they cause a slight elevation above the ordinary surface of the pericardium; they are usually found on the anterior surface of the heart, but may occur at any point. By some these patches are thought to be the result of a previous inflammatory action; by others to be due to a disturbance in the nutritive supply distributed to these localized points, augmenting thus the nutritive activity and in no way connected with an inflammatory process. This latter view is probably the correct one.

Still another non-inflammatory lesion of the pericardium is small punctate ecchymoses underneath the free surface of the pericardium. They are more commonly located in the visceral

layer, but may be found at any point. This condition occurs in cases of asphyxia, in leucocythemia, scurvy, pernicious anemia, etc.

Occasionally a large hemorrhage may occur into the cavity of the pericardial sac, non-inflammatory in origin, due to the rupture of the heart or one of the large blood vessels.

All of these conditions, however, except the excessive hydropericardium already mentioned, call for little or no treatment.

Under the head of non-inflammatory lesions of the pericardium may also be mentioned the occasional involvement of the pericardium with new growths, such as carcinoma, sarcoma, gummatous formations, etc.

Tubercular involvement of the pericardium is generally considered as an inflammatory process. With this condition we find the pericardium or the subpericardial tissue infiltrated with miliary tubercles. Here again, owing to the generally deteriorated condition of the system, hemorrhages are not infrequent. If the tubercular infiltration excites a surrounding inflammation all the products of an acute exudative inflammation will be found in addition to the tubercles when the pericardium is opened. In the fluid contained in the pericardium, and in its contained flakes of lymph tubercle bacilli may be found; this condition, however, and the finding of tubercle bacilli is extremely rare.

Taking up now the simple and acute inflammations of the pericardium, we find in the early and acute stage simply a deep and intense congestion of the pericardium, which condition is most marked, as a rule, on the visceral layer and around the roots of the great vessels. In some of the more intense cases there will be subpericardial hemorrhages, also a little blood-tinged serum in the pericardial sac, death ensuing before further inflammatory changes have been wrought in the pericardial membrane. More frequently, however, the inflammation results in a more or less abundant exudation of all the constituents of the blood into the pericardial sac. In some instances serum will predominate; in other cases the fibroplastic exudate will be the most abundant; in still others the two will be about equally divided, and in some rare instances it will be purulent in character.

In the nonsuppurative type, if the case pursues a favorable course the fluid will be absorbed and later on a part or all of the plastic exudate will also be liquefied and absorbed, and a complete recovery established. More frequently, however, there is the development of some new tissue with the formation of more or less permanent bands of new connective tissue connecting the visceral and parietal layers of the pericardium. Only in rare instances the adhesions may become so general that they completely obliterate the cavity of the pericardium. When this occurs it very materially interferes with the perfect action of the heart.

When we come to the pathology of the endocardium a somewhat different problem confronts

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us; this is on account of the difference in the histological construction of the two membranes, and also because its free surface is constantly covered by the ever-flowing current of blood. Histologically the endocardium is a more dense structure than the pericardium. The former has less surface vascularity than the serous membrane of the pericardium. Hence, when the endocardium is the seat of an inflammation there is less redness, less ecchymosis, and fewer punctate hemorrhages. Yet they are not altogether absent. If there is developed an inflammatory exudation upon the surface of the endocardium, as occurs in connection with the serous membranes in general, it is carried away by the current of blood constantly passing over the inflamed surface, for it is not found after death. What occurs more frequently, so far as we are able to judge, is a congestion of the vascular structures which constitute the deeper layer of the endocardium. This causes an augmented nutritive activity of the cellular structures forming the more superficial portions of the endocardium. Following this we have a variety of changes; they may result in a simple multiplication of the cells in the substance of, or upon the surface of, the endocardium. If located in the valves of the heart, they will appear swollen, soft, and sponge-like; if the lesion is located at the more closely attached portions of the endocardium as against the cardiac wall, it will give rise to soft velvety patches having a pinkish color. On the other hand, in connection with the valves there may be only a surface cellular proliferation, and thus we have formed the various grades and types of vegetations found at the necropsy. In some instances these cellular proliferations may grow so rapidly that their nutritive activity is not perfectly sustained and they will be detached by the current of blood constantly flowing over them, thus giving rise to emboli that may lodge in various parts of the body. In still other instances these vegetations will become more highly organized and remain permanently, thus interfering continuously with the flow of blood through the valve orifice, or with perfect closure of the valve. These vegetations may act, also, as foreign bodies upon which the fibrin-forming factors of the blood will be deposited, as fibrin; and this fibrin will later be detached, forming emboli, which may be dislodged and later lodge in some distant capillary or small blood vessel in various parts of the body. These changes in the endocardium of the valves may give rise to the formation of new connective tissue which by its contraction will distort the valve and make it incompetent. Or the newly formed connective tissue may undergo fatty degeneration, to be followed later by ulceration and calcareous infiltration. One or all of these changes may occur singly or together in the same case and thus cause an endless amount of damage to the valves and their physiological action. In some rare instances small pus formations are found in connection with this simple form of endocardial inflammation.

These small pus formations in simple endocarditis must not be confounded with that special type of endocardial inflammation which has been given the distinctive name, "malignant endocarditis." This name being used because this form of lesion always has for its etiological and distinguishing feature the presence of certain microorganisms; it is further a rapidly ulcerative and destructive process, and usually terminates the case in death, in a comparatively short space of time. On the other hand, cases have been reported as chronic in character. This is hard to comprehend in conjunction with the rapidly destructive nature of this disease.

It will be noticed that the bacteriological aspect of this subject has received little or no attention, as this part of the subject requires separate treatment.

The former class of endocardial inflammations, or the simple acute type, are not directly bacterial in origin; as is the malignant form, but appear to take origin in some toxic condition of the system, which of course is secondary to a bacterial invasion of the system, thus producing the disease that precedes and is often spoken of as the cause of the endo- and pericardial inflammation. By some it is claimed that the endocardial lesion is always the result of the direct action of the bacteria on the endocardium. This, however, needs further confirmation before it can be accepted as the only method for exciting an inflammation in the endocardium. The so-called nonbacterial lesion may be both acute and chronic, at least so far as duration is concerned. In fact every acute process if not speedily terminated by complete recovery becomes chronic in character.

To take up all the changes that may and do occur in the heart, in the circulatory apparatus, and throughout all the organs of the body in consequence of the pathological changes in the endo- and pericardium, is beyond the scope of this paper, which is limited to the pathology and treatment of the lesions of these two membranes.

Treatment is described usually under three headings: First, prevention; second, the management of the acute condition, and third, the treatment of the chronic stage or the after effects. The latter can hardly be spoken of from a pathological standpoint as treatment applied to peri- and endocarditis. It is rather the treatment of the secondary lesions that have been developed from an impairment in the functions of these two membranes. Hence, they will not be considered in this paper.

In a similar manner the preventive treatment is in a large measure a doubtful quantity, for we are not absolutely certain as to our etiological factors and the *modus operandi* of their action in producing these endo- and pericardial lesions. We do know that these membranes are the most likely to become inflamed in connection with the condition known as rheumatism, with the infectious diseases, with "Bright's disease" (so-called), and with syphilis. From these facts we are apt to say that these diseases are the causes of the in-

inflammations of these membranes. Hence it becomes us to exert our best therapeutic skill when dealing with these diseases, that their duration may be as short as possible and their intensity reduced to the minimum. The main object being to aid the system in every possible manner to rid itself as rapidly as possible of the toxic products that are keeping up the symptoms; in short, to shorten the duration and decrease the intensity of the disease as much as possible. This can be accomplished in an endless variety of ways, depending upon the inclinations of the individual practitioner. The main thing, however, is the dietetic and hygienic management of the case. The diet should be the most highly nutritious, and require the least expenditure of the digestive energy for its digestion and assimilation. The hygienic surroundings should be of the best, plenty of pure air and ventilation. Next the secretory and excretory organs should be augmented in their action by such drugs as will increase their physiological activity when sluggish, as they always are when the system is under the influence of a toxic infection. In this manner the general damage to the animal economy will be reduced to the lowest point and the liability to the development of an endo- and pericardial inflammation reduced to the smallest possibility.

In the treatment of the active inflammations of the endo- and pericardial membranes absolute rest in bed is the first desideratum. This should be prolonged for a considerable period after the more acute symptoms have subsided, if we are to secure the best results and prevent the establishment of a chronic lesion.

Locally, for the relief of the pain and the tachycardia which are the two most urgent symptoms in the acute inflammations, heat or cold applied directly over the pericardial region will in many instances give prompt and almost perfect relief. In some instances cold, in the form of an ice-bag, gives the best results; in other cases heat works the best. In some a fly-blister may be required. All three methods act, in all probability, reflexly through the central nervous system, thus causing a change in the circulatory activity in the inflamed endo- or pericardial membrane, by which the local pressure upon the nerve-endings distributed to the membranes is relieved. Outside of these measures there is little that can be done locally or directly to modify the pathological processes. Here, as in all other inflammations, the same general rules that are applicable to the treatment of the disease with which these inflammations are associated, hold true with equal force.

The advisability or nonadvisability of tapping the pericardium, is an interesting question, and one in which there is, as yet, no established rule of procedure. If the heart's action is positively embarrassed by the pressure of the fluid contained in the pericardial sac it would seem that only one opinion could be held, and that would be to relieve the pressure upon the heart at once by aspiration. In like manner, when the inflammatory effusion persists and resists all forms of

treatment, judging from the satisfactory results obtained in connection with similar conditions in the pleural sac, the day may not be far distant when the pericardium will be more frequently aspirated successfully. True aspiration of the pleural and pericardial sac is an entirely different problem from a practical and physiological standpoint, even though the pathological problem is almost identical. The former sac can be aspirated easily and successfully, while in the latter it will always be fraught with more or less danger to life.

SOME NOTES ON TRICUSPID DISEASES.

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SERIOUS affections of the tricuspid are comparatively rare and with the exception of pulmonary valve diseases, are the most uncommon. They are still more rarely single. Gibson, however, maintains that tricuspid insufficiency is the most common of valvular diseases, but Sperlberg from 300 autopsies makes the incidence 26 in 100 in combined lesions, and three out of 200 in single lesions. In 44 cases of valve disease as shown by postmortems, I find the incidence 12, or 27 per cent., while I have observed no single cases. Tricuspid insufficiency is usually relative and due to many causes, cardiac and extra-cardiac.

Organic lesions of the tricuspid valve due to endocarditis or atheroma are usually consecutive to mitral or aortic diseases, or general arteriosclerosis. Insufficiency and stenosis are the two forms recognized. Tricuspid insufficiency, however, is the most commonly occurring affection and the number of recorded instances must easily run up into the thousands, for in Guy's Hospital alone 405 have been recorded. These figures are in striking contrast to the published cases of tricuspid stenosis, which in 1897, according to Herrick¹ had only reached 154. So that although tricuspid insufficiency is comparatively rare, it is as common, as compared with stenosis, as the latter is rare.

Tricuspid insufficiency may be congenital or acquired; organic or relative. Ordinarily we see the relative (acquired) form, which is due to stretching of the valves from dilatation of the right ventricle consecutive to chronic affections of the lungs, or enlargement of the heart, whether from fatty changes or any other form of hypertrophy; perhaps from adherent pericardium. But there are other causes. In one of my cases the tricuspid was apparently dilated from pressure on the right auricle by an aneurism of the ascending arch, and the insufficiency was discovered during life. Tricuspid insufficiency is also a legitimate sequel to organic diseases of the left heart, and it may occur in the last stages of all these diseases. The preponderance of the relative variety over the organic is well shown in the record of the 405 Guy's Hospital cases already referred to, where 394, or about 97 per cent. were classed as relative. My tables make it about 90 per cent.

The question of insufficiency, however, has been disputed, even at the postmortem table, some holding that perfect competency is uncommon, because in applying the water test there will often be a little oozing through the valve. Such fine distinctions, however, have little practical value, because a slight oozing is not recognizable during life by any ordinary symptoms, and may be a temporary affair and of slight importance. In fact this minor degree of insufficiency may be due to faulty technic on the part of the operator, who fails to hold the organ squarely in his hand while applying the test. Practically, unless a good-sized stream of water can be passed through the valve when the organ is held properly in position, it should be regarded as competent. Besides the ring of the valve is well supplied with smooth muscle fibers, and the somewhat relaxed condition sometimes found at autopsies may be due to the general muscular relaxation which has occurred in the last hours of life or even after death.

Organic insufficiency is almost always due to endocarditis, and is a late manifestation of the general implication of the valves, which by preference first attacks the mitral and then the aortic.

Relative insufficiency is simply the result of physiological laws. When for any cause there is obstruction, or stasis, or slowing in the pulmonary veins due either to chronic pulmonary disease or to disease of the left heart, or pericardium, causing engorgement of the lungs with venous blood, the current of blood passing through the pulmonary artery finds an obstacle ahead of it, and the right heart dilates, and then hypertrophies in order to force the blood into the lungs. But this dilatation which takes place has stretched the soft muscular substance of the valvular ring, and caused insufficiency. And yet this relaxation may, after a time, be overcome by the general hypertrophy. But later, when the right ventricle begins to tire and contract irregularly from weariness, or degeneration of its fibers, the muscular tissue of the ring will also participate in the degeneration and again become incompetent. And this is one of the common incidents of heart failure in the last stages of valvular disease.

In other enlargements of the heart, as in fatty deposition, and in chronic fibrous nephritis, a certain amount of enlargement of the elements of the valve may take place and even keep pace with the enlargement of the heart walls; for it is known that in valvular diseases, even the leaflets sometimes enlarge, in order to close the orifice which they are intended to protect. If, however, there has been any deposit in the substance of the valve of a fibrous nature, contraction rather than expansion must take place.

The heart is large in organic valvular disease but may be small in the relative variety; especially in pulmonary tuberculosis, or other wasting diseases of the lungs.

As soon as tricuspid insufficiency has become established, a column of blood is forced through the tricuspid valve into the right auricle, which

also dilates, and later may hypertrophy, but the systolic action of the right ventricle, acting on the blood contained in the right auricle communicates its impact to the systemic veins, dilating them, provided the dilatation reaches such a degree that the venous valves are no longer competent. And so the blood in the veins pulsates. This phenomenon, called venous pulsation, is best seen in the veins of the right side, because these veins are in the direct line of the blood current as propelled through the insufficient tricuspid. And as the pulsation is specially well seen in the jugular it is called jugular pulsation. The internal and external carotids also pulsate under similar circumstances, but this phenomenon is not so easily seen as in the jugulars. For the superior vena cava and the innominate veins have no valves, so that no bar to the backward wave is felt, until they have been passed. But at the right sternoclavicular articulation there is a valve in the jugular veins, which resists the wave, and in fact it dilates below the valve, which is called the jugular bulb, where it is expanded into a rounded body, which may be seen or felt. In many instances of tricuspid insufficiency the backward wave does not progress beyond this point. The veins are simply filled. But if this valve gives way, then the wave is propagated onward into the external jugulars and subclavians, and may mount into the face.

Distinct pulsation in these cervical veins is, therefore, an important sign, and yet it is not pathognomonic. And one must always distinguish between this true venous pulsation, and a mere undulation of the current in the veins which occurs apart from tricuspid disease—the false venous pulse.

True jugular pulsation is best determined by pressing down the column of blood in the cervical veins, when the impulse will be found before it, not behind it. Compression of the carotids cannot be accomplished without using considerable force, so we are not likely to confound one with the other. To get the bulb of the jugular vein, the patient should cough, when it becomes distinct.

A sign that has been given by Pasteur² is distention of the veins of the neck with or without pulsation when the liver is compressed by the two hands. This action slows the blood in the inferior vena cava and causes increased tension in the superior vena cava and, so in the cervical veins. In my cases, however, the venous pulse was not noted as a prominent symptom.

Stasis in the pulmonary veins of the lungs produces cyanosis and dyspnea; in the systematic veins edema and albuminuria.

The degree of stretching possible in a case of relative insufficiency was well shown in one of my cases where the tricuspid admitted seven fingers while ordinarily it only admits two. In average cases of insufficiency it will admit three to four fingers.

In the comparatively rare form of insufficiency, the organic, the valves, its ring, and supporting structures become infiltrated, thickened, distorted

and perhaps contracted; for stenosis presupposes insufficiency. And yet if the stenosis is only in the ring, narrowing may occur without insufficiency, as happened in one of my cases of aortic stenosis. Practically then, in organic tricuspid insufficiency there may or may not be dilatation of the outlet. Atheroma rarely attacks the tricuspid valve.

One of the first symptoms is cyanosis. This is at first slight but may become extreme. Associated with it is more or less dyspnea, depending chiefly on the grade of venous stagnation in the lungs. Edema of the lungs is also more or less common and for a like reason there is edema of the lower extremities, first seen in the feet and then slowly rising towards the trunk. When the liver and kidneys become indurated we may expect ascites and albuminuria. One of the most prominent and early symptoms is the venous pulse that has been described.

Another sign is epigastric pulsation, but it is only appreciable when the cardiac systole is forcible. The radial pulse is usually small, soft and irregular and is apt to be rapid. A thrill is of rare occurrence. When it is felt it is probably due to an associated mitral or aortic disease.

The most characteristic sign of tricuspid insufficiency is the systolic murmur over the tricuspid area. It should be heard with greatest intensity over the lower half of the sternum, at the root of or over the ensiform cartilage (the nearest point to the tricuspid) to the right of the median line; occasionally as far as the right axilla or to the left of the sternum at the left fifth costosternal junction (Cabot) or just above it. But it should not be propagated any considerable distance to the left. The murmur is usually soft and faint. Exceptionally it is rough and harsh.

The second pulmonary tone so far as has been noted is weak, because a comparatively small amount of blood is propelled into the pulmonary artery. Doubtless in a very large number of these cases there has at some time been an accentuation of the second sound, owing to the accompanying mitral disease, but on the failure of the tricuspid this symptom disappears, and the weakness of the second pulmonary sound is therefore an important sign as indicating an advance in the general valvular disease. This symptom, however, is one too which too little attention has been paid.

Undoubtedly tricuspid insufficiency produces at first dilatation and then hypertrophy of the right auricle, and this is noticeable in some cases, but chiefly at the level of the right auricle. The heart in its totality is not enlarged, when the insufficiency has been of short duration.

In the heart failure which is so frequent an event in tricuspid insufficiency, one sees the facial discoloration, the wild expression, the projecting eyes. The patient leans forward, as this position is the most favorable for respiration; but he gasps for breath owing to the stagnation of blood in the lungs. The veins stand out in the neck. He can hardly speak and only in monosyllables. The ra-

dial pulse is weak and intermittent. The heart's action is tumultuous.

And yet tricuspid insufficiency is seldom recognized during life even under favorable circumstances. In 29 cases proved by autopsies at the Massachusetts General Hospital but five, or 17 per cent., were recognized during life. In 10 cases from my postmortem records the diagnosis was made in three, or 30 per cent. But the reasons are threefold. By some the diagnosis may be regarded as a refinement of comparatively little importance, in the presence of other conditions more apparent and even more immediately serious to the individual.

The most distinctive sign, as I have said, is a systolic murmur over the lower half of the sternum, and ensiform cartilage, the most common center of greatest intensity being (according to my returns) the fourth left intercostal space close to the sternal margin. At times the greatest intensity is as low as the fifth left intercostal space, close to the sternum, and the corresponding area on the right side; sometimes as much as an inch to the right of these points; so that on the whole this area is somewhat broader on the right side than on the left. Occasionally the murmur may be carried to the right axilla, but it is seldom carried much to the left of the sternum. But as the tricuspid is a large and rather indeterminate area, as compared with the mitral which is smaller and overlaps it, it is essential for purposes of diagnosis that the two distinctive sounds or murmurs in these two areas should be appreciably different in character whether as to pitch, quality or duration; and the propagation of the murmurs should be in different directions.

Epigastric pulsation is the next most important sign. It does not occur in simple mitral or aortic disease; but we may remember that tricuspid disease may be associated with organic mitral disease in 20 to 25 per cent. and with organic aortic disease in 15 to 17 per cent. It may, however, be absent.

Faintness of the second pulmonary sound is also important, especially if previously there has been accentuation of it.

The jugular pulse, however, once thought to be pathognomonic, is not so regarded now. It is seen in other conditions. It occurred in one of my cases of aortic insufficiency, without tricuspid disease. Simple fullness of the jugulars is, however, a noteworthy sign. Increase in the transverse dulness of the heart is not a reliable sign. It may occur or not. It may not exist in wasting pulmonary diseases.

The tricuspid murmur may also be mistaken for the murmur of aortic stenosis or the latter may mask the former, when it is propagated backwards, as it sometimes is towards the apex. However, the diagnosis of aortic stenosis should be established by the propagation of the murmur up the great vessels.

Simple thickening of the tricuspid without roughness, like simple oozing, gives no sign.

In general the prognosis is bad. There are

cases, however, in which heart stimulants will sustain the flagging heart and carry the patient into a region of comparative safety. In fact successive attacks may be mastered in this way, but the danger is always near at hand. And yet the prognosis is not so bad in the relative variety as in the organic. For the latter presupposes im-pacations of other valves. When there is albuminuria and scanty urine the prognosis is certain to be worse.

Case I.—Mitral stenosis: pulmonary, aortic and tricuspid insufficiency. A., twenty-six years old, single, was admitted to hospital September 18, 1880. Twelve years before admission the patient had a severe attack of rheumatism, and for about a year more or less palpitation and dyspnea. On physical examination marked pulsation was noted in the epigastrium. Murmur with first sound at apex not heard behind or in axilla. Want of synchronism between the two radials. Hypertrophy of heart. Cyanosis, nausea and scanty urine. The dyspnea continued and with it marked pulsation in the vessels of the neck. About five weeks after admission a "purring thrill" was noted in the fifth intercostal space one and a half inches below the nipple, with some recession of the soft parts, more distinct during inspiration. Patient developed orthopnea and died in a uremic convulsion.

The autopsy showed general anasarca. Heart weighed 16 oz. Mitral calcereous; only admits of index finger. Aortic slightly insufficient. Pulmonary insufficient. Tricuspid admits tips of four fingers. Right ventricle hypertrophied. Walls of left ventricle thinned. Fibrous phthisis. Edema of the lungs. Nutmeg liver. In this case the "purring thrill" of mitral stenosis had been noted, as it was the predominating lesion.

Tricuspid obstruction or stenosis, for they both appear to be synonymous, is one of the most uncommon forms of valvular disease. In 1881 Fenwick³ had only been able to collect 46 cases; Pitt of London in *Albutt's System* (Vol. VII, p. 25) only 87 cases during a period of 26 years, and Herrick of Chicago⁴ 154 cases up to 1897. Since that date, however, some more cases have been published, bringing the total up, according to my reckoning, to 162. These figures include two by Whyte⁵; one by Devic and Teyssier⁶; three from the records of the Path. Soc. of Phil., 1898, Vol. XVIII, pp. 132, 181 and 196 by Packard, Steele and McCarthy; one by Chadbourne,⁷ and one by Sir George Duffey.⁸ Total addition 8; grand total 162.

But tricuspid obstruction must not be considered as an independent disease. It is almost of necessity associated with tricuspid insufficiency, just as any valvular stenosis implies insufficiency. In fact so far as I know there has never been a case of stenosis without insufficiency unless it is one reported by Duroziez, the details of which I have not been able to obtain. And in only two cases (the one above alluded to and that of Devic and Teyssier) was there no accompanying mitral stenosis. Practically, therefore, we

may say that mitral stenosis is a constant attendant in tricuspid stenosis, and as the mitral disease is the older the tricuspid may be regarded as a complication of the former. It is a very serious one.

The former idea that tricuspid stenosis was a congenital condition has largely been abandoned, certainly in post-fetal cases, because the evidences at postmortem of its being last in a chain of circumstances are pretty positive, while the date of the first of the events (which so far as the valves are concerned is mitral disease) can be shown with considerable accuracy, the exceptions to this rule being so rare that they can practically be excluded.

There is of course such a thing as congenital stenosis which occurs usually, if not always, together with other congenital malformations of the heart. But in these cases life is rarely much prolonged after birth, so that, as in aortic stenosis, these congenital forms are almost never seen.

A feature of great diagnostic importance in tricuspid stenosis is that the great majority of the sufferers are women. In Leubet's 101 cases published in his *Thèse de Paris*, 1888 (as quoted by Whittaker), 80 were women, so that the proportion of women to men was about four to one. In Fenwick's 46 cases of which 41 were women the ratio of women to men was about nine to one. In 12 cases which I have collected 10 were women or five to one. So that the preponderance in favor of women is well shown, though the reason is not clear. However, whatever arguments tend to show that mitral disease is by preference a feminine lesion should apply here.

Fenwick found that the average age at death was between thirty-one and thirty-six. In my collected cases the average fell in the thirties. But very few survive the forties and a less number the fifties.

It is generally accepted that rheumatism is the most frequent causative factor. Fenwick found it in 50 per cent.; my figures in 10 cases accord with this ratio. In half of them we have to look for the cause in those influences that govern mitral diseases.

The heart is always moderately enlarged, but there does not appear to be much enlargement of the right ventricle; indeed it has sometimes been described as small. But the right auricle is usually dilated and sometimes hypertrophied, its walls showing manifest thickening. In tricuspid stenosis, coming as it does as the last link in the chain of valve events, there is not apt to be the marked organic changes seen in mitral stenosis. We usually find merely an agglutination of the segments, causing a funnel-shaped opening. Ordinarily it should admit two to three fingers. But in stenosis it may admit only one, or the tip of a finger. The substance of the heart must by this time have degenerated also, and we find induration of the lungs, spleen and kidneys, with the nutmeg liver.

There are symptoms in abundance, but rarely

enough or sufficiently distinctive to warrant a diagnosis.

This disease like all other valvular diseases advances insidiously.

The patient will complain of palpitation. In one-half of the cases there is cyanosis (Pitt) and it is apt to be extreme, while either a fullness or pulsation in the jugular veins may be observable. And with it necessarily there will be dyspnea, and perhaps orthopnea, either of them severe. In 75 per cent. of the cases, according to Colbeck, there is albuminuria or dropsy. On palpitation there may be a presystolic thrill, and yet the thrill can be due to a mitral stenosis. In the epigastrium there will be pulsation at times from enlarged liver (50 per cent., says Colbeck), and the force of the heart's impulse will be marked. The presystolic or diastolic murmur in the tricuspid area (which according to English ideas means "over the fourth and fifth spaces to the left of the sternum") should be heard and was heard in five out of seven of Colbeck's cases, though at irregular intervals. Some locate the murmur over the fifth or sixth right cartilage or over the ensiform; others again over the lower half of the sternum and as much as an inch to the left of it. Others again at the root of the ensiform cartilage or to the right of it. That there is some kind of a bruit was noted in the tricuspid area in 20 only of Fenwick's 32 cases. It should differ in pitch, quality, and duration from the associated mitral murmur, and this was noted in Shattuck's case where the diagnosis was made *intra vitam*.⁹ But in about one-quarter of the cases no bruit has been detected. Some have found the bruit in only one case out of eight. In about one-quarter of the cases also there was aortic stenosis. Mental confusion or hebétude has been noticed.

Thus far the diagnosis appears to have been made only in six instances (those of Colbeck and Shattuck) out of the 162 which I have alluded to, but of them it may also be said that many were not examined thoroughly because there was no opportunity to do so; and second, in the face of the manifest mitral and perhaps aortic lesions, no special interest was taken in those of the tricuspid. And owing to the inconstant character of the murmur, and its usually entire absence, it is not so strange that the diagnosis has been seldom made. Indeed for all time this lesion will be apt to escape notice, if we are to depend on specific auscultatory symptoms.

More constant than those as regular attendants are: (1) A co-existing mitral stenosis; (2) an enlarged and dilated right auricle; (3) palpitation, cyanosis, dyspnea, and edema; (4) the epigastric pulse, and (5) a previous history of rheumatism.

If then with these symptoms in a woman, under forty years, with a diastolic murmur in the tricuspid area, where the pitch, quality or other characters distinguish it from the mitral murmur, it will be safe to make the diagnosis of tricuspid stenosis.

The prognosis is worse than in any other form of valvular disease.

In congenital cases they seldom live more than a few days. In acquired cases much depends on the condition of life, however. A tricuspid lesion that would prove rapidly fatal in a working man may be maintained a fairly long time by a person in easy circumstances. Pregnancy, however, in women is a dangerous epoch.

In general the louder the murmur the less the danger. With considerable stenosis there is apt to be a mild bruit. Though patients rarely reach the age of forty years, in the case that follows seventy was reached.

Case II.—Mitral and tricuspid obstruction with insufficiency: Pulmonary embolism: Pleurisy with effusion.

L., seventy years old, was admitted to hospital Jan. 3, 1881. On admission the patient stated that up to a week before admission he regarded himself as well. Then he suddenly developed dyspnea. Slight cough and edema of legs.

On physical examination an occasional squeak was heard in the right parasternal line in the third interspace. Patient's sputum streaked with blood. Jugulars enlarged, almost pulsating. Heart sounds at first indistinct. Cardiac dilatation. Impulse diffuse. Systolic murmur loudest over ensiform cartilage. Tubular breathing. Pleuritic effusion. Retraction of soft parts at third left interspace with inspiration.

At the autopsy the right pleural cavity was found full of serum and the left nearly full. Infarctions of lung. Heart dilated and weighing 23 oz. Aortic and pulmonary normal. Right cusp of mitral thickened and bound down, orifice admitting seven fingers. Valves of tricuspid thickened and restricted (stenosis).

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EMBOLISM OF THE MESENTERIC ARTERY.*

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EMBOLISM of the mesenteric arteries is of such rare occurrence that each case seems worthy of report. The following case is therefore brought to your notice:

The patient was a young man, thirty-four years old, with a decided alcoholic habit. He came home at one o'clock in the morning from an acute alcoholic spree which had lasted four days. At 4 A. M. he was awakened by severe general pain in the abdomen, not localized. There was no

* Read before the Society of Alumni of Bellevue Hospital, April, 1902.

vomiting or nausea at this time. Three hours later he was called out and as the pain still continued to be severe, he took a quarter of a grain of morphine hypodermically and went about his work. On returning home an hour later, the pain having increased, he took a large saline cathartic. Marked abdominal distention was noticeable at this time. During the day the pain continued constant, although there were periods of intense exacerbation. The temperature was 90° F., the pulse 100 during the entire day. At intervals cathartics and high enemata were taken without result, the water returning but slightly discolored. At 10 P. M. the patient was first seen by me and half an hour later by Dr. W. B. Coley; at that time he presented the following picture: A large, stout man weighing about 220 pounds, with a very anxious expression and evidently in intense pain as the beads of perspiration on his forehead testified. His temperature was 98° F., pulse 100. His lungs were normal. Heart, slightly enlarged to the left with the first sound at the apex blunt and exaggerated, the second sound at the base slightly increased; no murmurs were present. The liver dullness beginning at the fourth space, at the lower edge was not determinable. The abdomen was moderately distended, generally tympanitic and equally and generally tender on pressure, though not markedly so. There was a slight prominence and rigidity of the recti muscles in the epigastrium with also a slight resistance on pressure and an indefinite sense of tumefaction over this area. There was no nausea nor vomiting at this time nor had there been during the day. This patient also gave the history of five years previously having had recurrent attacks of appendicitis which had ceased without operation. There was no localized tenderness in the iliac fossa. The patient complained that every capillary in his abdomen throbbed. There was no tenesmus and no prostration. A high enema of glycerine, four ounces, and a pint of warm water was given which brought away a little gas and a small amount of fecal matter. At this time the patient showed so little prostration that he was able to walk to the toilet unassisted.

The diagnosis of acute intestinal obstruction was made at this time, the cause for which it was impossible to determine. At 8 A. M. the next day the patient's condition was about the same; temperature still normal, pulse 100; the abdominal distention had slightly increased and the prostration was noticeable. Further attempts during the night to move the bowels by calomel and high enemata had been without result.

Thinking an operation would be necessary the patient was removed to a private hospital. Up to this time there had been almost no secretion of urine; the small amount passed was high-colored, concentrated and contained blood. At 1 o'clock P. M., Dr. W. T. Bull was called in consultation and frankly said he was unable to make a diagnosis, but thought that some form of obturation was most probable. Toward evening the pain increased greatly in intensity and there was

nausea with occasional vomiting of froth and bile. The abdominal distention was more marked; the pulse was 106, temperature 99° F. At midnight the condition of the patient was such that an operation was deemed necessary, but it was thought advisable to wait till morning. At eight o'clock A. M. it was found that the vomiting had become slightly fecal; the temperature was 100° F., the pulse 112, the distention was greatly increased and was very marked. The prostration was also extreme though the patient was perfectly conscious. Some seven ounces of urine had been passed during the night. The diagnosis was still in doubt.

Operation at 8:30 A. M., February —, 1902. Ether anesthesia. With the assistance of Dr. William T. Bull and Dr. John B. Walker and Dr. Preston Satterthwaite a median incision was made from the ensiform cartilage to the umbilicus. The distention of the abdomen was so great that it was almost impossible to keep the intestines within the abdominal cavity. A large amount of bloody fluid poured out of the incision. The omentum in the epigastric region presented a very peculiar appearance. It was considerably thickened, matted together by recent adhesions and studded with small embolic infarctions. A careful examination was made of the entire abdominal cavity, but at first nothing could be found to account for the intestinal obstruction. It was soon discovered that a large fold of mesentery of the small intestine was greatly thickened, in places being one inch to an inch and a half in thickness. This thickened portion was as large as two hands and supplied several feet of intestine.

The diagnosis of thrombosis of the mesenteric vessels was made, but as the intense congestion of the entire intestine with the great distention showed that peritonitis had already begun to develop, no further operative interference was attempted. The large amount of mesentery involved absolutely contra-indicated any radical operation, even had an earlier operation been performed.

The wound was closed as quickly as the distention permitted and the patient returned to his bed in fair condition. He suffered much from shock, and although he recovered consciousness in a short time, his pulse became rapid and very feeble and he died at 4 P. M., about seven hours after operation.

REPORT OF THE POSTMORTEM EXAMINATION. BY DR. HARLOW BROOKS.

The body is that of a large, well formed but rather obese male. Rigor mortis is not present and the body is still warm. The skin over the entire body is much cyanosed and in places shows petechial blotches. The pupils are widely dilated; the skin of the face is bluish. There is a recent surgical wound extending almost from just below the ensiform cartilage to the umbilicus. This wound is closed and several gauze drains lead from the cavity. There has been a slight escape

of somewhat blood-stained serum from the drains just mentioned.

On opening the peritoneal cavity about 300 cc. of thick, creamy pus escapes and the entire peritoneum, both parietal and visceral, is found to be covered with a thin exudate of thick fibrinous pus. The peritoneal capillaries are much injected, both on the walls and over the intestines. The entire gut is distended with gas, particularly the cecum, but the rectum and sigmoid are empty and not much distended.

The omentum is short, very thick and literally studded with small, spherical, injected, gangrenous nodules which appear not unlike small Delaware grapes; evidently they represent minute embolisms of the omental vessels. The omentum is much matted together, apparently from previous disease. The spleen is displaced upward seemingly by the distention of the stomach, so that it is found on the superior surface of the stomach near the esophageal opening. It is small, soft and moderately congested. The stomach is greatly distended with gas. The mucosa shows numerous old healed ulcerations, mostly of small size, and of long standing. The mucous membrane shows further an extensive chronic gastritis. The appendix is sharply folded upon itself, surrounded by edematous adipose and old adhesions; it is about 2 cm. long and has evidently ruptured with complete loss of the distal two-thirds. There are no evidences of recent inflammation, and clearly the inflammation has always been well localized by fibrous adhesions. The entire colon is greatly distended with gas. The mucosa is congested and in the ascending and transverse portions there is an abundant secretion of mucus. The sigmoid and rectum were washed clean.

The mucous membrane of the small intestine, as a whole, is very much congested, but in places it is anemic. There are a few minute emboli of the submucous vessels and more frequent and large lesions of the same character on the peritoneal surface of the small gut, resulting in small gangrenous patches. There are several surgical wounds of the gut, which have been closed with silk; apparently these represent small rents which have been closed surgically.

The mesentery of the lower folds of the ileum shows a very marked congestion and injection with the presence, in the mesenteric vessels, of minute emboli; this process becomes much more extensive in the upper folds of the mesentery, the emboli being larger and more frequent. The mesenteric vessels, as a whole, are much thickened and show a very markedly atheromatous intima; they are as large and heavy as the radial artery is ordinarily.

The pancreas is riddled with fat infiltration. The artery is about the caliber of the axillary artery; the intima is enormously thickened. The pancreatic duct is gangrenous in part, apparently from thrombosis of its nutritive artery. There is an extensive infiltration of the pancreatic interstitium, apparently largely inflammatory.

The liver is enlarged about one-half its volume. The capsule is smooth. The parenchyma shows an almost complete fatty degeneration in places, but in other areas it is less marked. There is advanced chronic congestion. The gall bladder is distended with 150 cc. of fluid, greenish bile. The duct is open throughout. The kidneys are surrounded by an enormous amount of loose adipose. The suprarenal capsules show almost absolute fatty degeneration of the cortical portions. The retroperitoneal deposit of fat is very abundant. The cortex of the kidneys is thick but very irregular. The blood vessels are much injected throughout. The parenchyma is swollen, granular and shows very marked fatty degeneration. The capsules are slightly adherent and there is a general connective tissue increase, particularly about the blood vessels.

The heart is large; the left ventricle is very firmly contracted, apparently from the administration of strychnine, for the heart muscle itself shows a very extensive fatty degeneration. The right auricle contains a preformed clot, apparently of two or three days' standing, as it shows beginning organization and is covered over with small granulomatous masses. It is firmly adherent to the superior external wall of the cavity. The mass of clot is probably the origin of the multiple emboli described. The arch of the aorta is of small caliber but it is extensively atheromatous, the atheroma being "*en plaque*." The coronaries show most extensive atheroma of the same sort, almost obliterating the lumen from place to place. This process is evidently in the proliferating stage. The aortic segments are thin, as though from great back pressure. Otherwise the heart valves are functionally normal.

The right pleural cavity is obliterated by subacute adhesions. The posterior portions of both lungs show extreme congestion with minute emboli in the pulmonary arteries. There are a few tiny, recent infarctions of the peripheral portions of the lungs.

The prostate gland is not enlarged. The seminal vesicles and the bladder seem to be in natural condition.

Cause of Death.—Multiple infarctions of mesenteric and pulmonary arteries, following thrombosis of the right auricle. Complicated by marked general atheroma and by extreme fatty degeneration of all visceral parenchyma, notably of the heart muscle, all probably resulting from alcoholic toxemia. Chronic appendicitis.

Microscopical Examination.—*Heart.*—The muscle fibers are swollen, cross striation is indistinct and entirely absent in some of the cells. Fatty degeneration is very marked and almost general. There is but a slight amount of pigment about the nuclei, many of which are dividing or eccentric in form. There is quite a well defined hemorrhagic exudate just beneath the epicardium, which is generally thickened. In many places the interstitium shows recent proliferative changes, particularly where it forms the adventitia of the auricles. The walls of the

auricles are much thickened, the change being most pronounced in the sub-endothelial layer of connective tissue.

Blood Clot. The blood clot found in the right auricle shows a distinctly laminated structure, the lower structures of which were most likely formed twenty-four hours or more premortem.

Lung. The lungs show the ordinary changes of hypostatic congestion with atelectasis.

Liver. The parenchymatous cells show very extreme fatty degeneration; they are deeply pigmented as from chronic congestion. The portal capillaries are widely distended and together with the intralobular radicles are much congested. There is considerable maceration of the cells impinging on the last mentioned vessel. The interstitium shows a moderate degree of recent proliferation.

Spleen. There is a hemorrhagic infiltration into and beneath the capsule which is considerably thickened. The entire pulp is much congested, deeply pigmented and the blood vessels show marked acute atheroma. Many of the connective tissue cells, as well as the pulp cells, are very deeply pigmented.

Kidney. The parenchymatous cells are swollen; many are desquamated and they show an extreme degree of fatty degeneration. The blood vessels are acutely injected and small hemorrhagic foci are frequent. The interstitium shows a moderate amount of chronic augmentation with pronounced acute proliferation. The vessels are markedly atheromatous.

Blood Vessels. The walls of the blood vessels are universally thickened; this is particularly true of the branches of the mesenteric arteries in which the subendothelial connective tissue layer is greatly thickened and infiltrated by small round cells. The endothelial coat is generally eroded. The internal elastic membrane is unusually well developed in most of the vessels.

Stomach. The mucosa shows extensive superficial congestion and erosion, with frequent areas of infiltration which extend far down into the submucosa. Glandular epithelium, especially the chief cells, is quite generally degenerated. The peritoneal surface shows a recent purulent exudate and the blood vessels are universally injected.

Omentum. Sections through the embolic foci show the surrounding tissue to be the site of extensive blood extravasations of much more severe degree than was apparent on gross examination. The blood vessels show the changes characteristic of embolism. Pronounced atheroma is general and the peritoneal surface is covered by a thin purulent and hemorrhagic exudate.

In view of the comparative rarity of the lesions just reported, the impossibility of making the correct clinical diagnosis until the operation, the hopelessness of the condition found and the confirmation of this by the postmortem findings, it would seem that a brief review of other similar cases would be of interest and may assist some one in some cases, in arriving at a correct diag-

nosis, followed by an early and successful operation.

Dr. J. W. Elliott,¹ of Boston, in 1894, successfully resected four feet of a gangrenous small intestine. In 1898 Dr. T. E. Gordon,² of Dublin, Ireland, also saved his patient after removing two feet of infarcted gut. In neither instance was the diagnosis made before the operation. Dr. Francis S. Watson,³ of Boston, gives the histories of 27 cases of thrombosis or embolism of the superior mesenteric arteries, and after reviewing these histories concludes: "In about one-sixth of the cases the autopsy showed that the intestinal lesion was sufficiently limited and well defined to allow of a successful resection of that part of the bowel."

In studying closely these cases, one notices that there is a great variability in the symptoms, and further, that there is no apparent ratio between the clinical picture and the extent of the lesion; and still further, that even when the lesion is apparently the same, e.g., total occlusion of the main trunk of the superior mesenteric artery, the clinical picture varies from no abdominal symptoms whatever to that of sudden and violently acute intestinal obstruction. We must realize, therefore, that the clinical symptoms in any given case of embolism of the mesenteric artery or its branches will not give any accurate clue to the extent of the intestinal lesion which an operation or postmortem examination may demonstrate.

The lesions from occlusion of the artery vary, and, as Welch⁴ points out, show all gradations between mere venous hyperemia with scattered superficial hemorrhages and complete necrosis and infarction, the controlling factors being doubtless the rapidity and extent of the arterial occlusion and the vigor of the general circulation.

Considering the cases more in detail, we find that the great majority are in patients beyond middle life and many suffering from co-existing diseases, most often cardiac or renal, with atheromatous arteries; a minority, however, are younger than forty years with no serious disease in other organs and the cause of the embolism is not discoverable. While the variability in individual symptoms is noticeable, there seem to be two main types of the clinical picture. The less common is sudden, violent, colicky pain, not localized, with obstipation and vomiting which later becomes fecal. The more common type is sudden, intense colicky pain, not localized, with or without distended abdomen and a diarrhea often bloody, with blood often in the vomitus, a subnormal temperature and great prostration.

Watson considers the only characteristic symptoms to be the combination of the intense, colicky, non-localized pain, bloody diarrhea and subnormal temperature. When vomiting is present and abdominal distention, the diagnosis is strengthened. It is worthy of notice that the pain

¹ Boston Med. and Surg. Jour., 1894, vol. p.

² British Med. Jour., 1898, vol. p.

³ Boston Med. and Surg. Jour., Jan. 1894, p.

⁴ Albutt's System of Medicine.

was localized twice in the epigastrium, once in the right iliac fossa and once in the right hypochondrium, and Welch, in his exhaustive article on the subject, mentions that a tumor has been felt in only three or four of all the cases reported.

Considering the differential diagnosis, we must consider volvulus, obstruction from bands, herniæ of all kinds, perforation of gastric and duodenal ulcer and acute pancreatic affections. In considering the differential diagnosis the type of the disease as represented by the case reported, cannot be differentiated from volvulus or obstruction of the intestines due to impaction within the gut. A clinical differentiation before operation or post-mortem examination is impossible. From the more common type with bloody diarrhea; strangulations of hernia and obstruction by bands and volvulus are differentiated by the obstipation in these forms of obstruction, and with bands, by the early and persistent vomiting and the incarceration shock; intussusception by its occurrence in 54 per cent. of all cases before 10 years of age, by its greater chance of presenting a tumor (66 per cent.), by the tenesmus and late appearance of abdominal distention and the blood and mucus being much less profuse. The symptoms of acute pancreatic disease are similar to those of embolism, but are limited to the epigastric region and the collapse in this disease is rapid; and while there is not uncommonly blood in the vomitus, there is no bloody diarrhea.

It is interesting to note that a few cases of recovery from occlusion of the mesenteric arteries have been reported, as branches of these arteries have been found occluded with long-standing fibrous plugs. Watson quotes John Chiene's report of a dissecting room subject in which the superior and inferior mesenteric arteries and celiac axis were all occluded at their origins from the aorta by fibrous clots of long standing.

MEDICAL PROGRESS.

MEDICINE.

Narcolepsy.—Attention has recently been called to this condition described first by GELINEAU in 1900 as characterized by somnolence of sudden onset and entirely beyond the patient's control, whatever might be his occupation or surroundings. S. I. ZELTNER (*La Habana Medica*, June, 1902) reviews the theories of the few observers who have met with this rare condition, as to its real nature, showing a pretty even division between those who hold it to be a separate pathological entity and those who regard it as a symptom of some other morbid condition; narcolepsy having been associated in many reported cases with a variety of diseases, while in an equal number of instances no pathological state could be discovered which would account for it. The writer refers to four cases in his personal experience, one of which was undoubtedly secondary while the remaining three were attributable to no other morbid condition. The following conclusions are drawn by the author: (1) Sudden invincible sleep may occur as an idiopathic infirmity; (2) as such, it develops suddenly after emotion; the latter being sometimes joyful, but more frequently painful; (3) narcolepsy occurs most frequently in patients whose intellect is not highly de-

veloped; (4) it occurs generally in the debilitated, owing to the cerebral depression induced by the causal malady; (5) change of surroundings and manner of living exert a favorable influence upon narcolepsy.

Influence of Massage on Leucocytes.—This subject has lately been experimentally investigated by E. EKGREN (*Deut. med. Woch.*, July 17, 1902). He subjected a number of male patients to general bodily and abdominal massage and studied its effects on the white blood-cells, taking the specimens before and also at definite intervals after treatment. In all cases he found a general increase of leucocytes, especially marked by a greater percentage of multinuclear elements and a correspondingly diminished percentage of mononuclear cells. The increase was noted within 10 minutes after massage was done, became greater in exceptional instances within the succeeding 20 minutes, and then gradually declined. In making this statement the author is not prepared to say whether the increase is actual or is due to a redistribution of the leucocytes in favor of the peripheral circulation, but he is inclined towards the latter view.

Mosquito Work in Havana.—Seldom, if ever, have any more satisfactory reports been made in reference to an attempt to exterminate a dreadful disease, than can be shown by the mortality reports of Havana in regard to yellow fever and malaria during the past year. Since it has been conclusively proven by experiment that these diseases can be communicated in no other way than by the mosquito, their eradication or control depends entirely upon our treatment of this insect. W. C. GORGAS (*Med. Rec.*, July 19, 1902) shows what systematic action has done for Havana and what the possibilities in other localities may be. Yellow fever is carried by the *stegomyia* mosquitoes, and at the beginning of 1901 determined efforts were made to control this disease; (1) by destroying as far as possible this species of mosquito; (2) by preventing those that escaped from biting yellow-fever patients and thus transmitting the disease, and (3) by endeavoring to kill all that had become infected. The city was divided into sections and an inspector with two laborers was assigned to each section. Every collection of water in the city was required to be kept mosquito-proof and every house was inspected to see that rules were carefully followed. Fines were levied when necessary. In the case of cesspools which could not be properly protected, petroleum was used. Practical experience has shown that when mosquitoes are troublesome in any house, they are almost invariably bred in that house or in those contiguous, and of the *stegomyia* mosquito this can be positively stated, almost without exception. To prevent mosquitoes from becoming infected by yellow-fever patients every case of this disease was carefully screened and isolated at the public expense and a guard stationed to see that no mosquitoes entered the room. Furthermore, in order to kill all mosquitoes in the neighboring rooms pyrethrum powder was burnt at the rate of one pound to every 1000 cubic feet of air space, and at the end of three hours the mosquitoes were collected and burned to obviate the possibility of resuscitation. The results have been phenomenal. During the past 10 years there has been an average of 462 deaths from yellow fever in Havana, varying from year to year, but never less than 172, which occurred in 1898. During the past year, however, since the above precautions have been observed, there have been but five deaths. The decrease in the deaths from malaria has also been very striking, and undoubtedly the excellent results are directly attributable to the mosquito work.

Neurotrophic Pathogenesis of Gastric Ulcer.—In a paper dealing with this question, A. TESTI (*La Ri-*

forma Medica, July 14 and 15, 1902) advances the theory that neuropathic conditions, notably neurasthenia and hysteria, latent or otherwise, may give rise to trophic lesions in the stomach capable of causing gastric ulcer. From his study of the subject and clinical experience, the author draws the following conclusions: Clinical observation, physiology, and experimental pathology show the intimate relation existing between the nervous system and the functions of the stomach. Central excitation of any kind, and disturbance of stomach function and secretion may be regarded in the light of cause and effect. On the other hand it seems certain that changes in the mucosa, of an infectious, toxic, irritative or traumatic nature do not take on a fatally progressive character if the innervation of the stomach be maintained in a physiological condition; and that excess of hydrochloric acid or gastric juice does not give rise to ulcer by autodigestion of the stomach-wall if the innervation is normal. The mechanism of the nervous origin of gastric ulcer may be considered as a disturbance of trophic equilibrium of the gastric mucosa through which the vitality of its elements is lowered, hence erosions, necrosis, and progressive loss of substance.

Trichinosis.—An interesting account of this rare disease in America is the article by A. K. DRAKE (Jour. of Med. Research, June, 1902). The trichinae are found in cats, rats, dogs and other flesh-eating animals, and if the trichinous pork is taken into the stomach, the capsules are dissolved, freeing the trichinae, a single embryo giving rise to from 1500 to 2000, producing gastro-enteritis a few days after ingestion. The young trichinae find their way presumably by the lymph-stream to the muscles, where they are shortly encapsulated. A myositis is then produced with the well-marked symptoms of pain, swelling, edema and partial paralysis, and the muscles of the larynx and mastication may be involved to an extreme degree, causing difficulty in speaking and swallowing. For some unknown reason the heart muscle alone escapes. Since blood examinations have taken so prominent a place in the diagnosis of many diseases, eosinophilia has been regarded as a diagnostic sign of the disease, but out of four cases observed by the author not one showed an undue proportion. When considering the means of eliminating trichinosis from swine, the suggestion was made that a blood-examination might prove of diagnostic value, but negative results only were obtained. The disease itself may be readily diagnosed, or, on the other hand, may be very obscure, especially if accompanied by phthisis, or disease in which enteritis or swelling of the extremities may occur. It may thus simulate typhoid fever, muscular rheumatism, or peripheral neuritis, and there may be periodic attacks resembling relapses, explained only by the fact that new crops are liberated by a long hidden embryo.

Test for Beginning Loss of Renal Function.—The great value of separately collecting the urine of the two kidneys and analyzing it for chloride, nitrogen and glucose after phloridzine injections and for reduction of the freezing point, in order to determine the functioning power of each, is becoming more and more evident. Much of importance can also be learned from watching the flow of urine from both ureteral orifices, for sluggish contractions of the ureters are common in pyonephrosis and tumors. F. STRAUS (Münch. med. Woch., July 22, 1902) has discovered a phenomenon which promises to be of great value for the early determination of loss of function on the part of one kidney, and which consists in administering diuretics so as to dilute the urine, and then determining the freezing point separately. If this is found to be below the normal on one

side it is safe to assume that some pathological process is taking place there.

A New Sign of Pneumonia in Children.—In genuine croupous pneumonia of children up to 10 years, there is often found an absence of the patellar reflex. This sign, according to M. PFAUNDLER (Münch. med. Woch., July 22, 1902) can frequently be elicited before auscultation or percussion gives evidence of the disease, and it may be of some value in differential diagnosis. In the cases examined the temperature was generally high, but sometimes there was no fever present and occasionally the reflex did not return at once after the crisis. With very young infants the phenomenon could not be observed; in the other patients it seemed to make no difference where the process was located or how much of the lung was involved. Most children with positive sign were strong and well-nourished and were seriously ill with the disease, showing especially cerebral symptoms with the onset, but no variation during the course.

Relation of Tuberculosis to Ear Disease.—In a statistical article, P. OSTMANN (Münch. med. Woch., July 22, 1902) finds that there is a close relationship between consumption and deafness, for in tuberculous families just twice as many children were found troubled with ear disease as in the non-tuberculous. Conversely, in those families where otitis abounded consumption was most prevalent, and a severe type of this was often present when a large number of children in a family had trouble with their ears. The conclusions are that tuberculosis predisposes to the development of ear diseases and decides an unfavorable course, the more so the more intense the infection.

Leucocyte Count in the Summer Diarrheas of Children.—Two conditions with which the practitioner is likely under certain circumstances to confuse the simple summer diarrheas of children, namely, typhoid fever and helminthiasis, are characterized by very typical features in the blood-count, namely, leucopenia in the former and eosinophilia in the latter. It is, therefore, extremely important to have data regarding the leucocyte count in the simple diarrheas, if only for purposes of comparison. This desideratum has recently been satisfied by KNOX and WARFIELD (Bul. Johns Hopkins Hosp., July, 1902), who made differential counts in a series of 25 cases. In the first place they were able to confirm the pretty well accepted opinion that the differential count in the blood of normal children under two years of age shows a relative increase in the small mononuclear elements and a decrease in the polymorphonuclears, as compared with the adult. In the summer diarrheas there is usually an increase of the leucocytes, but the count varies within such wide limits that a high or a low leucocytosis cannot be regarded as of diagnostic value. On the other hand, the differential count is of more importance. A relative increase in the polynuclears is an indication of an intoxication with decomposition products in the intestine, or of the toxins of pathological bacteria; the increase is, as a rule, in proportion to the severity of the infection.

Dysentery.—Since 1888, when Widal and Chantemesse published an article on the microbe of epidemic dysentery, they have continued to receive and study specimens of dysentery bacilli from all parts of the world, especially from Tonking, Japan, the Philippines, China, West Indies, the United States, France, Germany, Italy, Egypt and Algeria. They thus find that, no matter what the geographical location, the symptoms or the anatomical changes in the large intestine, the causative factor is this one bacillus. CHANTEMESSE (Bulletin de l'Académie de Médecine, July 21, 1902), therefore, considers that all dysenteries are either amebic or bacillary. Amebic dysentery is sporadic, non-

infectious, of slow course, and after a long siege of diarrhea and sometimes constipation, terminates by cure or by death from exhaustion, abscess of the liver or intestinal perforation. The blood of such patients does not agglutinate the dysenteric bacillus. Bacillary dysentery, on the other hand, is epidemic, infectious, and may rapidly prove fatal through its specific virus, or it may become chronic, causing ulcers and thickenings of the large intestine. It sometimes occurs sporadically or as a complication of other maladies, and is caused by the multiplication in the intestinal lumen in the walls of the large intestine, in the mesenteric lymph-nodes, in the spleen and in other organs, of a special bacillus which is agglutinated by the blood of those attacked with the disease. Moreover, men who have ingested this microbe have developed the characteristic dysentery, so its specificity is beyond question.

Epidemic Cerebrospinal Meningitis.—During the course of the epidemic of the cerebrospinal meningitis which broke out on board the *Montrose*, a British transport conveying Boer prisoners, E. C. FREEMAN (*La Sem. Méd.*, 1902, No. 22) treated three patients with antipyrin in doses of 0.30 to 0.60 grams, repeated three times in 24 hours. In one person, nineteen years old, the temperature, which at the beginning of the attack was 39.4 C., fell in two days under the influence of the medicine to nearly normal, while the pains in the back of the neck and in the head decreased. Nevertheless this youth underwent a recurrence and finally died after having passed during three months through a number of apparent improvements followed by exacerbations. His two other patients, thirty and fifty years old respectively, presented all the characteristic signs of cerebrospinal meningitis, but were completely cured. During this same epidemic this physician saw three other patients whom he treated by the usual method, but who died after a brief course. He thinks his experience may suggest a particular efficacy of antipyrin against cerebrospinal meningitis.

Severe Abdominal Symptoms Ushering in Pneumonia or Pleurisy.—That a pneumonia or a pleurisy may occasionally set in with so markedly pronounced abdominal symptoms as to mislead in the diagnosis at first is not new, but the cases reported by P. HAMPELN (*Zeitsch. f. klin. Med.*, vol. 45, Nos. 5 and 6) are unique in that three resembled at first perforative peritonitis and one intestinal obstruction. In each case operation was seriously considered until the pulmonary symptoms became more pronounced. Occasionally one meets with cases where an intestinal occlusion seems to exist, where pneumonic foci are present in the lungs and where on autopsy no real cause for the obstruction can be found, and yet everything seems to point to the abdomen as the primary seat of the disease. The possibility of a dynamic ileus with secondary involvement of the lungs must here be taken into consideration, especially since more or less consolidation is not rare with intestinal obstruction of any kind. The prominent abdominal symptoms in purely pulmonary conditions are best explained by involvement of the phrenic nerve and the diaphragm and, in accordance with this, the pneumonias always involved the lower lobe.

Trauma and the Pancreas.—Four cases are reported by C. ROSEN-RUNGE (*Zeitsch. f. klin. Med.*, vol. 45, Nos. 5 and 6) in which trauma induced severe and fatal disease and where on autopsy there was found injury to the pancreas and extensive fat necrosis. While the relation between the three is settled beyond a doubt it is often impossible to decide what induced the fat necrosis. Where the injury to the pancreas is extensive it is logical to assume some action of the pancreatic juice on the tissues, but there are many cases where the

injury is small and amounts only to a slight hemorrhage into the gland.

Amyloid Disease of Heart and Digestive Tract.—A case of amyloid disease with the rare location in the heart and digestive system, is reported by F. STEINHAUS (*Zeitsch. f. klin. Med.*, vol. 45, Nos. 5 and 6). A strong and healthy person is attacked suddenly with gastro-intestinal derangement and symptoms pointing to loss of compensation and during six months extreme cachexia develops, and finally a copious intestinal hemorrhage proves fatal. On autopsy, extensive amyloid and hyaline infiltrations are found in the myocardium in the form of milary nodules, and in the submucosa of the stomach and the intestines, without any evident cause. The occurrence of both hyaline and amyloid tissue together gives strength to the theory that they are closely allied and though their chemical nature is not yet definitely settled it seems likely that they represent a firm union of some albuminous substance with chondroitin-sulphuric acid and that they are formed by the intercellular coagulation of some substance derived from the blood. The analysis of the stomach contents suggested carcinoma in that hydrochloric acid was absent and products of fermentation had formed, but the autopsy showed that there was merely a benign stenosis of the pylorus, resulting from the deposition of amyloid substance.

SURGERY.

Prolapsus Recti and Paraffin Injections.—For obstinate recurrent prolapse of the rectum in children of various ages, in which all other moderate means of treatment had failed KAREWSKI of Berlin tried injections of hard paraffin of a melting point of 56 to 58° C. The method in full is first to evacuate the bowels actively for at least two days prior to treatment and then a few hours before to quiet the intestines by giving subnitrate of bismuth injections. The prolapsed bowel is gently and thoroughly disinfected and replaced. The index-finger is inserted just beyond the anus as a guide and then the paraffin is injected just between the skin and the mucosa, through one wound of entrance when practicable, and disposed about the anal orifice as a ring. The results are very favorable and the process rarely needs repetition.

Pulmonary Surgery.—It is only within the last decade that certain pulmonary processes have come into the borderland of medical and surgical treatment. Quincke has stated that surgical interference is more apt to be concerned with suppurative processes involving the parenchyma than with those of the mucosa, as in the latter case the bronchi usually provide an outlet. R. RIEGNER (*Deut. med. Woch.*, July 17, 1902) has classified the appropriate conditions demanding operation as follows: (1) Acute and chronic abscesses; (2) acute and sub-acute gangrene; (3) chronic gangrene; (4) bronchiectases; (5) tuberculosis. In considering surgical interference two questions arise: (1) Is the operation necessary and on what grounds? and (2) How are the indications to be judged? The author summarizes his conclusions as follows: The cases particularly suited for operation are those of acute or sub-acute pulmonary gangrene. Simple abscesses do not demand surgical interference. In chronic gangrene, bronchiectasis and tuberculous cavities, the chances for a cure are minimized owing to the multiplicity of the foci. The diagnosis of a focus is always required before an operation is practicable. A localized gangrene may often be recognized by the presence of the following signs: A circumscribed area of dulness surrounded by normal pulmonary resonance, the expectoration of numerous bits of lung parenchyma, and the coincidence of the physical signs with an X-ray picture.

Operations for Paralytic Club-Foot.—The present method of correcting paralytic club-foot is first to correct the deformity by reduction and then to restore deficient or lost function by tendon transplantation, usually from the tendon of Achilles to the peroneal muscles. A. SCHANZ of Dresden (*C'blatt f. Chir.*, 1902, No. 28) offers the following points in the treatment of cases in which both of these procedures are admissible: When a club-foot is reduced the various component elements of the deformity correct themselves very well up to that of talipes equinus, which always enters into these deformities more or less and must be corrected by operation which commonly combines lengthening of and transplantation from the tendon of Achilles. Usually both of these elements are necessary for a good result and are commonly carried out at the same sitting. Schanz pleads for the wisdom of doing the work in two sittings. In these club-foot operations as soon as the tendon of Achilles is divided the strongest preventive of eversion of the foot is lost, no matter whether the club-foot is congenital or acquired. He believes that the transplantation should be done first and then after four or five weeks the lengthening done, for this reason and also because a much simpler wound-condition obtains. The transplantation succeeds better when left to itself and when the rest of the tendon by being kept tense remains away from the transplanted portion. After the transplantation has succeeded the tenotomy should be done and the element of talipes equinus corrected while the transplantation checks inversion. He has found this two-stage method to succeed even in adults.

Local Anesthesia with Cocaine and Adrenal Extract.—If there is one operation of minor surgery in which local anesthesia by cocaine is indicated on account of its habitual convenience and effectiveness it is the avulsion of a tooth. Cocaine, however, has some disadvantages in inflamed tissues, and is not certain in its action in relaxed tissues. One or both of these conditions obtain in dental surgery through periostitis, gingivitis and laxity of the tissues about the tooth. The cause of the failure of cocaine in these instances is probably a too rapid diffusion through the circulation. Efforts have been made to meet this by dissolving it in less readily absorbed menstrua like paraffine oil, oil of sweet almonds, etc. The result of this plan is a perfect anesthesia but occasionally intense after-pains and the formation of various nodes which may persist for months. BATTIER of Kremlin-Bicêtre has made use of the vaso-constricting properties of adrenal extract as an aid to the cocaine for overcoming the causes of the latter's failure. He employs a 1 per cent. solution of cocaine and a 5 per cent. solution of the adrenal extract. He injects first the requisite amount of the cocaine and then that of the adrenal extract solution and finds that the blanching of the tissues by the latter maintains the anesthesia and permits the operation to proceed bloodlessly.

Continence after Total Extirpation of the Rectum.—Rectal cancers are very rarely so situated as to permit total removal and still leave the sphincter ani behind and in perfect or even partial control of the patient. The vast majority of them are so low down as to render sacrifice of the muscles absolutely essential, if the surgeon is to be guided by the chief aim of all operations upon malignant growths; namely, to secure permanent cure or freedom from recurrences for several years. Gersuny's torsion of the bowel often succeeds very well indeed, but has the dangers of gangrene by being made excessive, or of absolute failure by being insufficient. O. WOLFF (*C'blatt f. Chir.*, 1902, No. 28) has found that very good control of the bowel at least for formed feces is obtained by injections of

paraffin. These should be made after the wound has progressed well toward healing, say two weeks after the primary procedure. If made before that time gangrene or other interference with the result of the primary operation may ensue.

A Simple Suture Carrier.—In the issue of the *Centralblatt für Gynaekologie*, 1902, No. 20, Eisenberg described a suture carrier which has already been noticed in these pages. E. KURZ of Florence in the issue No. 28 outlines a similar though simpler apparatus which he has been using for several years. Its parts are detachable and consist of two wings combined as a hollow handle into which the tube or bottle filled with the silk fits and themselves fastened together in a cone into which the needle-points fit. The suture material runs along the needle to its eye and in this manner constantly plays out as needed. Kurz has never published any note of his instrument and does so now only to illustrate how readily similar devices are evolved.

PHYSIOLOGY.

The Strawberry as a Lymphagogue.—The peculiar urticarial manifestations following the ingestion of strawberries in certain people having an idiosyncrasy for this article of diet, are explained by L. B. MENDEL and D. R. HOOKER (*Amer. Jour. Physiol.*, July 1, 1902), on the basis of the lymphagogic action of the active principle of the strawberry. Heidenhain was the first to suggest that the urticaria and diffuse edema seen after the ingestion of crustacea, are to be explained by the fact that the crustacea act as lymphagogues. He had shown that peptone, extract of leeches and crustacea produce this lymphagogic action by stimulating the endothelial cells of the blood capillaries, which thus exert a secretory function resulting in the formation of lymph. Sugar and inorganic salts also cause an active lymphatic flow. That the peculiar action of strawberries is not due to the sugar and inorganic salts contained in them, is to be explained by the fact that the latter give rise to a flow which is less rich in dissolved substance than the lymph normally flowing from the duct of the same animal, while the strawberry gives rise to a lymph richer in solids than the corresponding normal lymph, and exerts no such diuretic action as do sugar and the inorganic salts referred to.

The Properties of the Arterial and Venous Walls.—Many important contributions to the knowledge of the vascular system are made by J. A. McWILLIAM (*Proc. Royal Soc.*, June 19, 1902). Not the least of these is that which describes a postmortem contraction of the arteries. Excised shortly after death, an artery may be strongly and persistently contracted long before rigor mortis has appeared in the heart and skeletal muscles, and indeed while these muscles are obviously living. The causes of this contraction are mechanical stimulation, *e. g.*, cutting, etc., and exposure to air, while cooling to a few degrees above 0° C. favors it. It is well marked in all the arteries. It is associated with an increase in the length of the artery. The duration of this postmortem contraction varies. In the horse and ox it lasts for several days, but in a warm chamber the arteries relax in twenty-four hours. Immersion in olive oil prolongs the postmortem contraction. There is a persistence of the excitability of the arterial wall after death, that lasts for many hours, frequently for two or three days. Exposure to chloroform vapor causes powerful contraction. Suprarenal extract has a marked influence in inducing arterial contraction at relatively long intervals after death, as twenty-four to forty-eight hours. Freezing prevents postmortem contraction. After this has occurred, it may be removed by freezing, immersion in a solution of sulphocyanide of potassium,

which leads to complete relaxation and permanent loss of excitability and contractility, and by strong ammonia vapor. Contraction may also be removed by heating, kneading, rubbing and stretching. Manifest are the effects of heat upon the arterial wall. On a relaxed artery heating to 60-65° C. causes a well-marked and commonly extensive contraction. This is to be attributed to the elastic and connective tissue elements of the artery, for it is seen in arteries in which the muscular proteids have been removed by prolonged maceration in large quantities of saline solution. On the other hand in the case of an artery contracted postmortem, heating to 50-55° C. causes relaxation; a further rise to 60-65° C. leads to the appearance of contraction. There is abundant evidence in favor of the conclusion: that post-mortem contraction is a true persistent contraction, very different in many respects from the rigor mortis of skeletal muscle.

The Thyroid in Inanition.—An experimental contribution to the knowledge of the changes occurring in the body in the fasting condition is made by A. G. BARBERA and D. BICCI (Bul. delle Scie. Med. di Bologna Serie VIII, vol. II, 1902); this work following similar studies of the suprarenal capsule. It was found that inanition caused, in the cells of the thyroid as well as those of the suprarenal capsule, reduction in volume of nucleus and protoplasm, the change being most marked in the latter; especially does the nucleus of the thyroid cell lose less than that of the suprarenal. From the fact that in inanition the loss in weight is least in those tissues and organs which fill the highest functions, as for example those of the central nervous system, the author formulates the theory that the greater loss in the lower order of tissues may be ascribed to the fact that they contribute something of their own substance to prolong the life of the higher. A parallel is drawn between the higher order of tissues and the more highly developed and essential part of the cell i.e. the nucleus, on the hypothesis that the protoplasm assimilates solely nutritive substances derived from outside the cell, while the nucleus not only obtains nutrition from these same substances, but also from the protoplasm itself; thus accounting for the greater diminution in volume of the latter in the fasting animal. It was further observed that at no period of the fast did the cells of the thyroid cease to elaborate its colloid substance, though the quantity was somewhat reduced. The intercellular substance was likewise decreased.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Significance of Eosinophilia.—Undoubtedly too great importance has been attached by some to the presence of an eosinophilia in the blood, but we must now look for helpful suggestions in differential diagnosis by watching closely the information which is obtained from blood examinations, and we have already found that an eosinophilia is of great help in differentiating several diseases which, otherwise, closely resemble each other. T. R. BROWN (Maryland Med. Jour., July, 1902), has made careful blood examinations in a large number of cases and finds that an eosinophilia is commonly found in the following conditions, besides that disease in which a marked increase of these cells was originally described: Splenomyelogenous leucemia, bronchial asthma, acute and chronic skin diseases, especially pemphigus and eczema; intestinal parasitic diseases, the most important of which are ancylostomiasis and trichinosis; scarlet fever, especially in the second and third weeks of cases terminating favorably; sometimes in malignant tumors; drug eosinophilia, of which perhaps acetanilid furnishes the

most marked example and the moderate eosinophilia which sometimes appears in gout, gonorrhea, syphilis, malaria, rheumatism and chorea. The presence of this blood condition has already served several times to differentiate trichinosis from malaria or typhoid, and the discovery of an eosinophilia has frequently been the first clue obtained to the real nature of the disease. In a severe case of anemia an eosinophilia is very helpful in diagnosing ankylo-stomiasis from pernicious anemia. As regards prognosis an eosinophilia is of real value in several conditions such as typhoid, where an early reappearance of these cells (they disappear in the stage of continued fever) points to a favorable prognosis; in the anemias where a slight eosinophilia is a good sign; in tuberculosis where it is also looked upon favorably; and in various surgical conditions where the presence of a moderate increase is considered hopeful. More extended investigations will undoubtedly lead to more definite and more valuable diagnostic and prognostic conclusions relative to eosinophilia.

The Effects of Typhoid Bacteria Products.—A contribution to the question of the relationship between the agglutinating and immunizing properties of blood serum is made by A. SCHÜTZE (Deut. med. Woch., July 3, 1902). He made use of a specially prepared extract of *B. typhosus* by ammonium salts, which was supposed to contain a substance capable of generating a specific typhoid-agglutinin in the body. The injections were made in a series of rabbits and guinea-pigs. It was found that after repeated injections, agglutinating substances could be demonstrated, which in a dilution of 1 to 300 caused an immediate agglutination of typhoid bacilli in a test-tube. The same phenomenon could also be observed in a dilution of 1 to 1000 if the test-tube was placed for a half hour in an incubator at 37° C. The specific nature of this act was proved by the failure of the serum to act with other bacterial cultures. That this serum contained no immunizing properties was also demonstrated by its failure to protect when injected, against even a small quantity of typhoid culture. The author concludes that it is possible to produce in the blood serum of rabbits a substance with specific agglutinating properties against typhoid bacilli, by means of the injection of a fluid derived by chemical agencies from pure typhoid cultures, which in itself does not possess agglutinating properties. Moreover, such a serum possesses no immunizing properties, and the writer believes there is no connection between the typhoid agglutinating and immunizing bodies.

Action of Finsen Light Therapy on Lupus.—The first anatomical structures upon which the electric light of the Finsen method acts, are the blood-vessels where a swelling and proliferation of the lining endothelial cells takes place. This is best seen in the uncomplicated angiomas of the skin but can be followed as well in the more complex lupus nodule. That the whole process is not in the nature of a cauterization is best proven according to A. SACK (Münch. med. Woch., July 8, 1902) by the absence of all coagulation necrosis. The cellular, retrogressive changes may be in part necrobiotic, yet are elective in that they involve only the most pathologically altered elements, those only slightly changed being rendered healthier and ultimately converted into connective tissue. A bactericidal power is also present, but is subordinate.

Physiological Function of Tumors.—From the standpoint of an ardent opponent to the parasitic theory, E. ALBRECHT (Münch. med. Woch., July 8, 1902) argues the pathogenesis of tumors. The fact that so often the change from benign to malignant can be well observed and forms an orderly series of lesions, frequently taking their start in a simple hyperplasia, seems to indicate that there is some process at work independent of germs,

but incited by some as yet unknown disturbance to the normal equilibrium of cell-life. A good example is the change from a simple endometritis to the glandular polypi of the uterus and these again to the adenocarcinoma. We are as much in doubt to-day as ever as to what converts the harmless, typically growing tumor into a structure composed of cells showing marked aberrations in their growth and cell-division, yet the general impression that one receives is that it is merely the last stage of one and the same process that has created conditions, which, in that they are eventually inimical to life, must be considered as malignant. The fact that meta-static growths may functionate as does the organ from which they are derived, is a peculiar phenomenon which favors the non-parasitic view and which proves another maxim in physiology, namely, that the relation of a gland to its blood-vessels, without the presence of secretory nerves, is sufficient to allow it to secrete. Several cases are on record where the metastases of a hepatic carcinoma secreted bile in the lungs. The author's interesting case is an endothelioma of the dura mater which, although considerable of the cortex had been invaded, had caused no symptoms during life except by a metastasis in the bladder leading to a hydronephrosis. Microscopic examination showed the tumor to be alveolar in structure, the alveoli being filled with erythro-blasts and communicating with the bloodstream. Everything pointed to the fact that hematopoiesis was going on in the growth and the same process could also be seen in the vesical metastasis so that both carried out a physiological function.

Topical Diagnosis of Gastric Tumors.—It has been shown that the gastric mucosa presents local differences in its secretory powers, the fundus producing both pepsin and rennet ferments, while the pylorus produces pepsin only. GLAESSNER (Berlin. klin. Woch., July 21, 1902) has attempted to make use of these facts in the localization of gastric tumors, as these usually occupy one of these regions and are capable of inducing marked secretory changes in the parts of the stomach in question. A series of tests were made in 13 cases, the free hydrochloric acid, total acids, pepsin and rennet ingredients being measured after the Ewald test breakfast. The author thinks the method of value if other means have failed. He states that if both rennet and pepsin are markedly diminished a fundus tumor is probably present. If the rennet ferment, however, maintains a good ratio when compared with the pepsin, the tumor is to be found at the pylorus.

Pathology of a Case of Polienccephalomyelitis.—Engorgement of the vessels of the gray and white matter throughout the cervical cord, medulla, pons and crura, perivascular infiltration of round and oval cells in the gray matter, and, to a less extent in the white matter from the lower end of the decussation of the pyramidal tracts to the exit of the third nerve, this infiltration more marked on the right than on the left; degeneration of the multipolar cells of the anterior horns of the cervical cord (especially on the right side) of the cell of the lower two-thirds of the nucleus of the seventh on the right and of the lower third of the nucleus of the sixth; edema and numerous hyaline bodies in the gray and white matter and in the perivascular spaces in the tegmentum of the pons at the level of the nucleus of the fourth nerve, extending beyond the exit of the third nerve; engorgement of the vessels and edema in the brain without capillary hemorrhages or degeneration of the white tracts; all these were the lesions found in a case of polienccephalomyelitis by A. HAMILTON (Jour. of Med. Research, June, 1902). That this was a case of primary acute inflammation, toxic in origin of the gray matter of the cervical cord, medulla and pons seemed most probable, though it dif-

fered from the typical disease of Wernicke in several respects. Wernicke's disease attacks adults, usually alcoholics; this patient was a child of five. The nuclei involved usually form themselves into two groups, those of the external ocular, third, fourth and sixth—polienccephalitis superior; or the motor nuclei between and including the seventh and twelfth—polienccephalitis inferior. These forms may be combined wholly or in part, but the involvement of the gray matter of the cervical cord with the nucleus of the sixth and seventh has never been described before, though a combination of the cervical cord, the twelfth nucleus and the seventh is not so uncommon. The disease is described as lasting seven to 14 days, but this case ran an unusually rapid course, being fatal in less than three days, and was further peculiar by the absence of capillary hemorrhages and by the rapid degeneration of the nerve-cells. The remarkable harmony between the clinical history and the pathological findings in the case deserve to be pointed out in view of the great disparity between the two so often found, yet the harmony was not complete even here. The respiratory symptoms in the form of Cheyne-Stokes breathing would lead one to expect degenerative changes in the nuclei of the tenth, but these were found to be normal. The respiratory disturbances, however, came on much later than the paralysis of the sixth and seventh nerves, and it is well known that the earliest stages of degeneration in nerve-cells are not demonstrable by staining methods. The wandering cells found were of four types, viz., small, mononuclear with round, deeply-staining nucleus, large, pale, epithelioid cells, polymorphonuclear leucocytes and a few giant cells. No plasma cells were found. The hyaline bodies gave only one specific amyloid reaction: that with methyl violet, hence it could not be considered corpora amylacea; it is likely that they resulted from post-mortal coagulation of an exudate.

Gliomata of Ependymal Origin.—Three interesting gliomata are reported by F. B. MALLORY (Jour. of Med. Research, June, 1902). The first tumor was a very vascular, slowly growing glioma of the fourth ventricle. The cells tended to fuse together into cell-clumps, some of which contained minute lamina, and definite gland cavities of various sizes were present. The peculiar round, oval and rod-shaped, differentially staining markings, characteristic of ependymal cells could be seen not only in the cells lining the gland-like cavities, but also in the cell-clumps and in many of the single cells. They varied from about 10 to 30 in a group and were usually situated in the periphery of a lighter staining area in the protoplasm. Delicate neuroglia fibers were quite abundant throughout the tumor. The second growth, likewise from the fourth ventricle was much less vascular and consisted of cellular and dense areas of neuroglia tissue. In the cellular areas the cells tended to fuse together and definite gland-like cavities also occurred. The markings peculiar to ependymal cells were present in the cells of this tumor as well, but in smaller number, varying from two to about 10 in a cell. The third tumor was interesting from its locality, its structure and its histogenesis. Situated subcutaneously over the coccyx, it resembled in its structure a carcinoma, consisting of masses of epithelioid cells embedded in the meshes of a connective tissue stroma; but between the epithelioid cells occurred a second intercellular substance, namely, fine and coarse fibers which stained by the differential methods for neuroglia fibers. Moreover, many of the cells contained from one to five minute rod-shaped markings which stained by the same methods. In consequence of these it seemed reasonable to infer that all these tumors were of ependymal origin, and possibly all gliomata of this kind are definitely characterized in the same manner.

Mode of Action of Various Laking Agents on Blood Corpuscles.—The action of a number of hemolytic agents on fresh and hardened blood has been studied by G. N. STEWARD (Jour. of Med. Research, June, 1902) with the following results: Ether dissolves out a considerable amount of material, including cholesterolin from washed, formalin-fixed corpuscles. Sapotoxin produces no change in the conductivity of a suspension of such ether-extracted corpuscles. It probably produces the increase of permeability in the unextracted formalin corpuscles by an action on substances soluble in ether. It is to be presumed that it also acts in this way when it laves unfixed corpuscle. Sapotoxin causes no change in the conductivity of a suspension of washed sublimate-fixed corpuscles and these can be laked by heating them in water. The addition of ammonia to formalin-fixed corpuscles changes the methemoglobin spectrum into that of oxyhemoglobin. The corpuscles can then be laked by the addition of water, slowly in the cold, rapidly on heating. Corrosive sublimate and formalin do not seem to fix precisely the same constituents of the corpuscles. The former fixes the stroma very rapidly and the mercury can be withdrawn from its combination by sulphuretted hydrogen. On the further addition of ammonia, or on adding ammonium sulphide at once, the ghosts may disappear. Amyl alcohol in its laking action does not appear to cause the liberation of the electrolytes of the corpuscles, and the same is true for ether, except in larger amounts. Some of the agents investigated are active leucolytic agents (especially sodium taurocholate), but there is no direct proportion between their erythrolytic and their leucolytic power. Although some laking agents, such as crude saponin sapotoxin and sodium taurocholate increase the permeability of formalin-hardened corpuscles and might, therefore, be supposed to produce their laking action on unhardened corpuscles by increasing their permeability to the dissolved substances of the serum and thus causing water-laking, evidence is brought forward that this is not the primary action of these substances, although it may be a secondary one. For laking was produced by all the agents investigated in blood to which excess of cane-sugar, which does not penetrate the normal corpuscles, has been added. Even when blood is saturated with cane-sugar, laking occurs. Only in the case of foreign serum is the laking notably delayed and rendered incomplete. Laking is also produced by the various agents in sediments of corpuscles freed as far as possible from serum and containing so little inter-corpuscular water that even the entrance of the whole of it into the corpuscles could only cause a small amount of water-laking.

Bacteriology of Pulmonary Gangrene.—In five cases of pulmonary gangrene, four of which were chronic and one acute, W. OPHULS (Jour. of Med. Research, June, 1902) found a number of bacilli with the following characteristics: They were long, slender, more or less curved rods or threads with irregularly staining protoplasm, occurring in clusters and showing true branching. With methylene blue they stained badly, better with dilute carbre-fuchsine and very well with Gram's method. After having been stained with Ziehl's carbre-fuchsine the bacteria decolorized in acid alcohol but not in aqueous solution of sulphuric acid. Attempts at cultivation failed except in one case, and here only a scanty growth was obtained. It is most likely that these acid-proof bacilli belong to the class of actinomycetes and are of a more saprophytic nature, most probably being derived from the mouth.

Clinical Nature of Bile after Cholecystotomy.—An examination into the chemical nature of bile as it flows out of biliary fistulae was made by A. E. AUSTIN (Jour. of Med. Research, June, 1902) in the hopes of

obtaining some clues as to the formation of gall-stones. Associated with a diminished amount of solids there was found to be a diminution in the total bile as compared with the normal. The cholic acid was considerably reduced, and much to the author's surprise there was no increase in the amount of cholesterolin present. One case showed more lecithin than normal, the calcium was not in excess and the difficulties in quantitative determination of the taurin and glycocholl were so great that these results were omitted. The diminished amount of cholic acid, the natural solvent for cholesterolin may be the chief factor in the formation of the stones.

Simple Media for Differentiating Typhoid from Colon Bacilli.—The general tendency to complicate media is strongly criticized by P. H. HISS (Jour. of Med. Research, June, 1902), who has been able to differentiate the typhoid from the colon bacilli satisfactorily by means of simple combinations. The medium which has been most thoroughly tested consists of agar, 15 grams; gelatine, 15 grams; Liebig's extract of meat, five grams; sodium chloride, five grams and dextrose, 10 grams to 1000 cubic centimeters of distilled water. No correction as to reaction is necessary. The best method of making an investigation on feces is to transfer one to several loopfuls to a tube of nutrient broth or sterile water, making a fairly cloudy emulsion. From this emulsion five or six plates are usually made by transferring one to five loopfuls of the emulsion to tubes containing the melted plate medium. When the loopful of the emulsion is thoroughly mixed with the medium, this is poured into a Petri dish, allowed to harden and kept for 12 to 18 hours at 37° C. The deep typhoid colonies are of irregular shape with well-marked threads of bacilli given off from them; their texture is generally loose and their color often light-green, becoming darker in the large ones. The surface colonies may be quite flat and homogeneous, or may show a denser center with threads spreading out from it. On the other hand the typical deep colon colonies are denser, darker and larger and do not have irregular outgrowths or fringing threads. The surface colonies are quite characteristic in that they are large, disc-shaped, of a deep color nearly to the periphery, terminating in a well-marked, light thin zone. The typical thread-forming colonies of typhoid together with the diffuse clouding and non-gas formation are found seldom, if ever, as characters of organisms other than typhoid bacilli occurring in feces, so that these latter may be readily identified in 24 to 36 hours. Even the intermediate or Gärtner group gave different pictures.

Carcinoma and Tuberculosis in the Same Tissue.—Five cases where tuberculosis and carcinoma were present in one and the same organ, are recorded by H. MOAK (Jour. of Med. Research, June, 1902). Two main questions of interest arise from their study; the mode of origin of the hybrid disease and the possibility of any real antagonism between the two processes. It seems quite certain that either one may appear first in the affected tissue or that both may appear together, and it is probable that in some regions one form of the combination is especially apt to occur and in other regions another, the difference depending partly on the anatomical peculiarities and partly on the susceptibilities of the tissues. In considering the supposed antagonism, a number of factors must be taken into consideration, the most important of which are: (1) That cases of active tuberculosis occur for the most part at a time of life before carcinoma becomes prevalent; (2) that the figures showing that carcinoma and tuberculosis apparently exclude one another are based altogether on cases of active tuberculosis and do not take into account latent or healed tuberculosis; and (3) that the

organs most frequently affected by tuberculosis are not the organs most frequently attacked by carcinoma. The conclusion thus is, that there is no real antagonism between carcinoma and tuberculosis.

Diagnosis of Typhoid Fever.—A method claimed by Chantemesse (Bulletin de l'Académie de Médecine, July 14, 1902) to be of easy applicability is as follows: A small amount of fecal matter, as fresh as possible, is planted in a large tube containing 10 c.c. of 3 per cent. neutral peptone water. After six or seven hours in an incubator at 37° C., the liquid is filtered and two or three drops of very strong anti-typhoid agglutinating serum added. On centrifuging, a clot, mostly composed of typhoid bacilli, forms at the bottom of the tube. The supernatant liquid is decanted and a few drops of sterile water added to the clot. This is then thrown on a flat paper filter, the non-agglutinated bacilli being carried through while the agglutinated remain on the filter. The paper is then tapped over Petri dishes containing the following mixture: Peptone water (Defresne) three parts, gelose 2 parts, lactose 2 parts, water to make 100 parts and to each 10 c.c. is added four drops of 3-per-cent. solution of carbolic acid and 1 c.c. of tincture of litmus. At the end of 12 hours in the incubator, the typhoid cultures are recognized by their smallness and pearl blue color, while the colonies of colon bacillus are red. In all cases of typhoid fever the author finds typhoid bacilli in the feces, even before the Widal reaction can be obtained.

Blood in Scarlet Fever.—The results of the examinations of the blood in a number of cases of scarlatina conducted by D. RECKZEH (Zeitsch. f. klin. Med., vol. 45, Nos. 3 and 4) showed only a moderate anemia, the red cells averaging four and a half millions. The temperature and complications did not influence this number and even very severe nephritis with hematuria caused no reduction. Qualitative changes in the red cells were not of common occurrence, though slight variations in sizes and intensity in coloring and rarely poikilocytosis with normoblasts were seen. The amount of hemoglobin corresponded to the number of red cells, the average figure being 90 per cent. No variations were noted as to formation of fibrin, shrinking or development of rouleaux, but the blood-platelets suffered, a considerable increase during the end of the febrile period. Especially when contrasted with measles, the condition of the leucocytes was interesting. On the second day of the disease their number was normal or slightly increased, to rapidly reach high figures with the full development of the rash and then to fall slowly so that the normal is not yet reached after fever and eruption have already disappeared. Polynuclear cells form the largest percentage of the leucocytes; the lymphocytes were correspondingly diminished but may be slightly above the norm toward the end of the third week, unless the case is complicated by glandular swellings when somewhat higher figures are obtained throughout the disease. Of high importance is the proportion of eosinophiles which is high irrespective of the leucocytosis and which reaches its acme with the disappearance of the rash. Mast-cells were sometimes found but their presence is of no importance. From a prognostic point of view the disappearance of the leucocytosis is of no value since complications, such as a nephritis, may still set in. The great value of a blood examination in scarlet fever lies in differentiating this disease from measles, since in the latter there is a hypoleucocytosis and the eosinophiles are not increased.

THERAPEUTICS.

Sanatoria in the Treatment of Consumption.—Of a large number of patients, the course of whose diseases was carefully observed at well-recommended sana-

toria, 35 per cent. were restored to apparently full health, 38.6 per cent. were considerably improved, and only 22.5 were not influenced by the modern method of treating consumption. D. HAMMER (Münch. med. Woch., July 1, 1902) has contrasted these figures with those furnished by the large class of consumptives who are not able to receive sanatorium treatment, and finds, strangely enough, that both sets of figures almost correspond. The old observation that tuberculosis among the lower working classes is readily amenable to treatment as long as the patients merely cease work for a short time, while with the better classes much more favorable conditions must be instituted, seems to be partially responsible for this. Change of climate is always followed by the best results in incipient cases, but unfortunately there is as yet no reliable method or sign which permits with certainty an early diagnosis. If not absolutely certain, it is unjust to the patient if his physician expects him to live in a colony of consumptives, even though he be more than reasonably sure of the true nature of the condition.

Treatment of Furuncles.—Attention has lately been called to the abortive treatment of this condition by the subcutaneous injection of carbolic acid, in an article by Bidder, who claims to have used the method with success for many years. In line with this appears a method advocated by TRENTÉ (Deut. med. Woch., July 10, 1902), which has also stood the test of time. He employs a watery solution of pyocyanin, 1 in 500, of which a sufficient quantity is injected into the furuncle to give it a decidedly blue color. The needle is introduced into the healthy surrounding skin, and when the inflammatory area is reached is pushed in various directions. If numerous sinuses are present as in a carbuncle, several injections are necessary, and resolution may be hastened by wet dressings of a solution of hypochlorite of soda.

Treatment of Erysipelas.—A unique method of treating this condition has been in vogue in Bulgaria for some time and is now reported by TREGUBOW (Deut. med. Woch., July 3, 1902). It depends on the effects of a flame applied to the affected area until a burn of the first degree results. A small wad of cotton moistened with alcohol is lighted and held by means of forceps close to the skin. No harm is done if the skin is touched by the flame. As soon as pain begins the flame is transferred to a fresh area until the entire affected surface has been treated. Where practicable an ordinary spirit-lamp may be used. This process should be applied two or three times daily. The writer, who claims to have had great success with the method, has usually not found it necessary to continue the treatment for more than two days.

THERAPEUTIC HINTS.

Antistreptococcus Serum in Erysipelas.—In February, 1895, MARMOREK reported forty-five cures of erysipelas by this serum, so in six cases of surgical erysipelas Edwin Rosenthal (Annals of Gynecology and Pediatrics, June, 1902) applied the treatment. He injected 10 c.c. morning and evening and in one case 20 c.c., but without any modification of the course of the disease. He, therefore, rejects the treatment as valueless.

Hematuria.

B Ext. Phosphogmatis gram 0.40 (gr. vii)
Ergotini 2.0 (gr. xxx)
Ext. Gentianæ. q. s.

M. et div. in pil. no. xx. Sig.: One to two pills a day, increasing one pill a day till the desired effect is obtained or intolerance established.—GIOVANNI in Le Progrès Médical, July 5, 1902.

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SATURDAY, SEPTEMBER 6, 1902.

CLINICAL OSMOLOGY—A NEW DEPARTMENT OF PRACTICAL MEDICINE.

THE adjective clinical attached to a novel feature in medicine always attracts the attention of even the most case-hardened practitioner. The new science of applied osmology, physiological and pathological, has developed in recent years until now it claims the privilege of a separate text-book for its promulgation. *Lehrbuch der klinischen Osmologie als funktionelle Pathologie und Therapie nebst ausführlicher Anweisung zur kryoskopischen Technik*, von H. Zikel (Fischer, Berlin, 1902), merits attention, for it is suggestive along lines in medicine with regard to which up to the present time there has been the most inscrutable mystery. The effects of acute infectious diseases on the blood, the morbid sanguinary changes produced by such conditions as chlorosis, leucemia, scorbutus, pseudoleucemia and the hemorrhagic diathesis have all proven to be beyond the most thorough investigation of pathological chemistry as heretofore applied. But at last they are yielding up a part of their secret to the searching methods of osmopathology.

In an introductory essay written for the new text-book Prof. Senator of Berlin says that the

application to medicine of the investigative methods employed in the physical sciences has always given us the most important practical advances in diagnosis. We have learned that living bodies are subject to the same physical and chemical laws that govern the rest of nature. The further introduction of such methods then cannot but be promising. As the laws and phenomena of osmosis have been of great significance in the borderland of chemistry and physics, they can scarcely fail to be of service in medicine where physics and chemistry meet, as it were, on common ground. Already in pharmacology it has been recognized that the effect of many remedies depends upon the osmotic alterations they induce in the tissues. We are at length realizing that the principles of osmosis may prove of service in the explanation of organic function and the internal metabolism of the tissues, though much work on the part of many observers will be needed before these mysteries are rendered clearer.

The first steps in the new branch of medicine were undertaken not more than 10 years ago. In 1893 Koranyi, the distinguished Hungarian professor of clinical medicine at Budapest, showed that the freezing-point of urine might be made a clinical test somewhat more delicate and exact in its significance than the complicated chemical analyses that had been introduced. This method is founded on Raoult's well-known law used for the determination of atomic weight in chemistry, which may be stated as follows: The lowering of the freezing-point of a solution is proportional to the number of molecules dissolved in the unit of volume of the liquid, whatever be the nature and weight of the molecules.

Of two urines then, that whose freezing-point is lower than the other's will contain more molecules in solution. Apart from the sodium chlorid that comes through in the urine, the efficiency of this fluid as an excrementitious product depends on the number of molecules it contains. The more highly organized the products that are dissolved in the urine, the fewer the molecules, since organic products like albumin contain molecules of large size. If the metabolism of the tissues is normal these higher molecules are broken up with the release of energy and the multiplication of molecules. It is the special function of living tissues thus to obtain energy by breaking up the more highly organized molecules of carbon compounds into those of molecularly

lower status. The determination of the freezing-point of the urine, cryoscopy, as it is called, from the Greek words *κρύος* ice, and *αἰσθάνειν* to investigate, may well serve as a test of the efficiency of metabolism and especially may serve as an index of kidney sufficiency.

From cryoscopic examination of the urine to that of the blood-serum was a natural step, and thus the first index of internal osmosis was obtained. Interchange of products in solution through animal membranes—that is to say, the active osmosis that keeps up the constant metabolism constituting life—depends to a great extent on the number of molecules in solution in a given nutrient liquid. Variations in the cryoscopic coefficient may then be taken as representing differences in the efficiency of many metabolic processes within the body. The first practical application of these principles came when Koranyi suggested that the cryoscopy of the blood-serum might furnish an index of the respiration insufficiency in cardiac disease with progressive failure of compensation. Kovács of Vienna demonstrated that there was a heightened osmotic pressure of the blood during insufficiency and that this could be modified favorably by the use of oxygen inhalations. Such inhalations produced an immediate alteration in the freezing-point of the blood. In the test-tube the presence of carbonic dioxid lowered the freezing-point, while its replacement by oxygen raised it again. These experiments furnished a firm basis in theory for the use of oxygen in all diseases in which there is a tendency to the accumulation of carbon dioxid in the blood.

Koranyi has applied this method of examination especially for the purpose of determining the method of living most suitable for those affected with cardiac diseases. In those whose heart muscle is weak, though there may be no signs of actual incompetency, the slightest excess of exercise—and this is a very relative term, being quite different for each individual—is at once noticeable in the cryoscopic blood coefficient. Careful observation of this factor enables the physician to decide with certainty how much exercise may be allowed without incurring such risk.

In a word, the new department of clinical medicine promises to be not only of theoretic but of practical advantage. It may be objected that the methods of blood and urine examination suggested are too technical and too complicated. The same objection was urged

against the chemical examination of the urine, the microscopical examination of the blood, and even more strenuously against the introduction of bacteriological methods into practical medicine; yet at the present time these are in possession of an undisputed field in medicine. So many clinical authorities see a future in osmopathology and osmotherapy that the subjects must be considered worthy of faithful observation by those ambitious of keeping abreast of medical progress.

ANENT "APERITIFS."

THE French medical mind, which is quick and ready to receive impressions, but which also has a subacute tendency to hysteria, seems to be much exercised over the report of the commission appointed to investigate the manufacture, sale and use of cordials, liqueurs, and other appetizers. That their use, and more particularly their abuse, should be productive of harm when long continued is too patent a fact to require an academic board to demonstrate, especially when these more or less alcoholic, essence-laden "aperitifs" are used as a stimulant to the passions of the lower class, the exuberance of whose spirits usually finds vent in the individual by the playful use of the *savate* on his unoffending neighbor, and which expresses itself collectively by the formation of a commune.

Hard liquor is proverbially supposed to give courage to the phlegmatic Dutch, and may add desperation to the Anglo-Saxon thug, but the use of these liqueurs brings neither to his neighbor across the channel, and the mixing of the blue powder of acute stimulation with the white one of an utterly wrecked nervous condition produces only a temporary effervescence, which is followed, according to the testimony of their own investigators, by a final "flatness" of decadence, degeneration and paresis. This is not a new condition of affairs, for a law forbidding the manufacture and sale of absinthe was passed in 1848, but as its execution would have interfered largely with the revenue receipts it has never been enforced, while not only has the liqueur habit increased and spread, but the quality of the cordials themselves has deteriorated until, from the use of synthetic essences in the place of those of the natural fruits, they have become more deleterious than ever and a most prolific source of ill health and crime.

Acting under this belief a year ago, Dr. Valiant, a socialist deputy, during a parliamentary debate on the liquor laws, made a motion that the

French Academy of Medicine should be asked to submit a list of the alcoholic drinks containing essences dangerous to the public health in order that their manufacture might be forbidden and their sale in the cafés prohibited. As the minister in control failed to report the proposition, the Academy independently appointed a commission under the chairmanship of M. Laborde who has, according to the London Lancet, sent the results of their examinations directly to the Chamber of Deputies.

The first impression gained on perusing this report, is a feeling of wonder that any of the guilty should have escaped, for the simple cordials of our post-prandial *chasse* have resolved themselves into the most active and violent of Borgian draughts. Absinthe in every quality, including the best, contains poisonous elements, while the other liqueurs which are generally made from synthetic essences, are dangerous in the extreme. Even vermouth is no exception, and chartreuse contains thirteen substances which can produce serious results, vulnerary has fifteen and anisette heads the list with still more, but in this case the synthetic essence contains a quantity of hydrocyanic acid, which is unquestionably the legitimate spouse, while the others are mere correspondents. For so strong is this essence, says the report, that a few inhalations from a bottle containing it produce grave symptoms of syncope and a feeling of illness that lasts for several days. French gin (Genievre), a form of wood spirit, is most injurious, and bitters are also dangerous.

With such an ample and economical supply as this to meet the demand of a strong and rising market it is only natural that we should expect to see some immediate result from the combination, and in this we are not disappointed, for Dr. R. Grisel, writing in L'Echo de Paris, speaks most openly, not only of the increased consumption of these liquids, even by women and children, but also of the unwillingness of the government, for budgetary considerations, to do anything to check the downward movement. He also asks rather pertinently, if it would not be a better business proposition for the state to forego the revenue resulting from the sale of these drinks—a source of income already reduced by extensive frauds—than to expend the profits for asylums for the victims of alcoholic madness, hospitals for diseases caused by absinthe drinking, and prisons for the criminals that it creates. To this catalogue of horrors he adds a diminution of the birth-rate,

an increase in the mortality of infants, and a vast enlargement of the number of idiots and cripples, with a growing development of consumption, of which alcohol is, he says, one of the principal factors.

What the ultimate fate of the report will be in the Chamber of Deputies remains to be seen. It may be smothered outright by the insolence of office or die a lingering death from the inanition of the law's delay. That some action should be taken is painfully apparent, but parliamentary bodies move slowly, and it is evident from the experience of the past that the accomplishment of medical legislation cannot yet be classed as one of the things that they "do better in France."

THE ARMY NURSE CORPS.

AMERICANS are, as a race, progressive, if they are nothing else, and the formation of the "Army Nurse Corps," recently organized, uniformed and equipped, under the provisions of the Army reorganization act, is as novel in its conception as it is unique in its consummation. For of all the great armies of the world, that of the United States is the only one that has a regularly organized female contingent. The nearest approach to it in the past was perhaps the *vivandière* of the French Army, and she, outside of the expurgated and etherealized *la Cigale*, seldom nursed anything but her wrath, and was by nature much more suited for the couch of the quick than she was adapted by her training for the bedside of the dying. Brave she was, and cheery, too, in her gay red skirts, but her place, with her little brass-bound barrel, was with the men in action, and her rôle was rather that of a ministering Amazon than one of a calm and self-collected nurse behind the firing-line.

Now this is all changed, and in place of a body of camp-followers, irresponsible and undisciplined, even if blessed with the dash and *élan* of the "Cigarette" type, we are to have a trained corps of competent women, governed by the regulations of the Army and subject to the orders of their immediate superiors in the performance of their duty, with the usual penalties of the service for disobedience of commands and neglect of regulations.

The uniform of the corps consists of a waist and skirt of some suitable white material, detached white cuffs, clerical collar and white apron, with a cap of regulation pattern, while the corps badge, which is the same as that of the medical department, is displayed on the left side

of the collar when the nurse is in uniform, and on a corresponding part of her dress when she is not.

That such a corps of women will prove an undisguised blessing to our Army, either in the field or in our distant outlying possessions, is evident, for with the casualties of actual warfare and the ravages of tropical epidemics, the demands for its services will be continuous, and the nurse will not find that her burden is light, or that her yoke is always easy, but the good that she will do will be as incalculable as the comfort she will bring, a comfort not only to the maimed and stricken themselves, but to those afar who will always feel—thanks to her—that at the end, even in a strange land, there was no “lack of woman’s nursing” nor yet “dearth of woman’s tears.”

ECHOES AND NEWS.

NEW YORK.

Smallpox Banished from Manhattan.—After a struggle of more than two years the Health Department is now able to announce that there is no case of smallpox in the Borough of Manhattan. Brooklyn has only three cases at the present time. Last year New York City had an average of 80 cases reported per week, or over 4,000 during the year. The Board of Health attributes its success chiefly to vaccination and revaccination.

Subway Nuisances.—W. B. Parsons, Chief Engineer of the subway, and President Lederle of the Board of Health have had a conference in relation to the necessary steps for keeping the subway excavation clear of refuse and stagnant water. Many complaints have been received by the Board of Health to the effect that sewers have been broken, refuse thrown into the excavation, and pools of stagnant water allowed to stand there. It was decided to ask Commissioner Partridge to request the police to assist the watchmen employed on the tunnel in keeping persons from throwing refuse into the subway, and Mr. Parsons promised to request the assistance of the contractors in keeping the excavation clean. President Lederle has detailed two inspectors to investigate the nuisances.

Lincoln Hospital’s Broader Field.—The Colored Home and Hospital at East One Hundred and Forty-first Street and Southern Boulevard changed its name on August 15, by application in the Supreme Court, to the Lincoln Hospital and Home. It will henceforth be conducted as a hospital open to all races and creeds, though the “home” connected with it is reserved for aged and infirm negroes. It had become more and more evident that the necessity no longer existed for a hospital devoted to the care of negroes exclusively. The general hospitals of the city receive them as readily as the white. Furthermore, there is a prejudice among negroes against entering an institution set apart for their own race, and they have shown a decided preference for the hospitals which take both white and black. As a result the wards erected in 1898 were not as well occupied as the friends of the institution had hoped. The residents of Bronx Borough had been sending complaints to the city that the hospital facilities in the Bronx were inadequate, and had expressed a desire

for an improved ambulance service. The Board of Managers of the colored hospital and their advisers then made the institution a general one. In order to supply the Bronx the improved emergency service so urgently required, the institution has procured a complete ambulance outfit, and Commissioner Partridge has assigned the Thirty-fifth precinct for ambulance patrol. All classes of cases will be looked after at the hospital, and none are transferred to other institutions. A training-school for colored nurses is maintained by the hospital, and two years’ theoretical and practical work are required for graduation. The entire nursing is carried on by the undergraduates of the school under the supervision of a superintendent of nurses. There are already 18 graduates, all of whom are engaged in active work as private or institutional nurses.

Governor Odell on Hospitals.—The ceremony of laying the corner-stone of the new hospital at Dobbs Ferry took place on August 29, and was made memorable by a speech from the Governor of the State. His speech consisted mainly of general reflections upon disease and charity, such as were befitting the occasion, but contained also the following significant passage, which may be considered as the official expression of the executive anent the State hospitals: “There may be difference of opinion as to the extent to which we should go in the consideration of this question, but there is none as to the desirability of continuing the work. I have often thought that perhaps we were too narrow in the conception of our duties, that in the treatment of the wards of the commonwealth we were transgressing somewhat the limitations which should surround the administration of this important department of the State government. I never believed, however, that the State did not owe to every citizen the duty of giving to him the best service and the most enlightened treatment. There is a happy medium between the enthusiasm which does not stop short of extravagance and cold business proclivities which can see only the saving which may be far from economy. We should not, however, in our consideration and treatment of this subject, forget that we owe a duty not only to the weak, but also to those who contribute; that charity should not be abused, and that its liberal character should not be taxed to such an extent as to defeat the object for which it is intended. It was my privilege during the past year to visit all of the State’s institutions, and what impressed me more than anything else was that the extravagance of our people had led them more in the direction of expensive and ornate buildings than towards the food supply and medical treatment that was designed to bring back health and intelligence. It led me to the conclusion that those who were nominally in control practically exercised but little influence for the good of the inmates. From this followed legislation intended to cure some of the evils which through years of neglect had grown up and to secure a corresponding benefit to the inmates. While its object was at the time misunderstood by some, I am convinced that the result will be of such lasting benefit that its value, which is now more fully recognized, will become more apparent with each succeeding year.” In a strain which it is to be hoped is sincere, the Governor continued: “Politics should never be permitted to be a factor in the administration of institutions for the unfortunate. It has no place there, and I have so much confidence in the wisdom of our people that I do not believe they would tolerate such interference, but would be quick to condemn those

who were instrumental in taking advantage of the deplorable physical conditions which exist in our institutions for either party or personal benefit."

PHILADELPHIA.

Dr. Keen to Resume Work.—Dr. W. W. Keen, who, with his two daughters, has been making a tour around the world during the past 15 months, is expected to arrive in New York September 19. Contrary to some reports in circulation, Dr. Keen will resume his teaching and practice.

Paper Money to be Washed.—In view of the reported prevalence of smallpox in New Jersey towns adjoining Philadelphia, many of the local banks have begun to wash and disinfect all paper money received. This precaution was taken during the height of the epidemic here, but of late had been abandoned.

Typhoid Fever Again Prevalent.—The report of the Bureau of Health shows 92 cases of typhoid fever during the week ending August 30. This is the largest number of cases reported for any one week since the threatened epidemic of last April and May, when the number varied from 97 to 137 weekly. These cases are not confined to any one section of the city.

Smallpox at Parryville.—Secretary Lee of the State Board of Health has been called to Parryville, a town of 500 people in the vicinity of Mauch Chunk, to quell a disturbance growing out of the fact that nearly one-tenth of the population have smallpox. The neighboring townships put up a barricade as quarantine, which on three occasions the inhabitants of the borough tore down. The arrival of Dr. Lee, who effected a compromise, averted bloodshed.

Program of the State Medical Society.—The official program of the fifty-second annual meeting of the Medical Society of the State of Pennsylvania to be held at Allentown September 16-18, has been issued. All sessions will be held in the Lyric Theater, 25 North Sixth Street. The session of Tuesday forenoon will be devoted entirely to the transaction of business. At the close of the afternoon session a visit will be made to the Allentown Hospital, the management of which will give a reception at the Livingston Club. On Tuesday evening the President's annual address will be delivered, and a reception given by the Medical Society of Lehigh County will follow it. On Wednesday afternoon, following adjournment, a visit will be paid to St. Luke's Hospital, South Bethlehem. Wednesday evening Secretary Hamilton will deliver a lecture on "Food Adulteration," after which receptions and smokers will be given by Drs. Herbst and Kress. The scientific program contains the names of many prominent physicians of the State and promises to be one of great practical value.

Instruction in Private Nursing.—Two bright young trained nurses of Philadelphia have discovered an entirely new field of usefulness for members of their profession. Having a talent for imparting knowledge, rather than a love of tending the sick, they have opened classes where well-to-do women in private life may learn the rudiments of trained nursing—enough to enable them to assist the doctor intelligently in their homes, in cases not serious enough to require the services of the professional nurse. Working independently of each other, they rented two small flats in different parts of the city, each of which has a bedroom, kitchen and bath, and these were fitted up as models of their kind for nursing purposes. They contained all modern sick-room improvements and appliances. When a class is in session it moves from one room to another, according as the lesson of the day demands. How one should dress in the sick-room and personal hygiene in order to prevent contagion are the first pieces of instruc-

tion given to the class. Each pupil is asked to provide herself with the necessary cap and apron, and a linen dress is recommended. Care of the bed—how to keep it clean and comfortable—is the next thing learned. Lifting the patient lightly and gently in order to change the bedding or shift the position is then mastered, followed by instruction in moving the convalescent, with many hints towards making her comfortable in any available couch or chair. For lessons, when practice of this kind is required, a woman is engaged by the teacher to represent the patient. After this the class turns its attention to the model sick-room itself. Methods of ventilation, the temperature, sweeping without raising dust, dusting without disturbing the quiet of the room are discussed and explained. The most convenient and sensible furniture for the sick-room, use and disinfection of the various appliances and utensils and the keeping of them clean and in order—these and all other points of sick-room hygiene are thoroughly gone into. The class then proceeds to devote its attention to administering to the patient personally, beginning with the simplest duties, such as taking the temperature of the body and keeping the daily register for the visiting physician. The preparation and application of baths, douches, water-bags, flannels, salt-bags, iodine, liniments, mustard plasters, poultices and enemata are likewise taught. Lastly a few lessons are devoted to the cooking of approved food and the construction of dainty dishes for the sick. Each course consists of 40 lessons. Two lessons are given to each class in a week, and a lesson lasts two hours. Not more than six pupils are admitted to one class, so that all may have the benefit of practice as well as the instruction. The charge is \$1 a lesson for each pupil, which enables the nurse to realize almost \$3 an hour on every class.

CHICAGO.

Election of Dr. Moyer.—Dr. Harold N. Moyer has been elected to the Chair of Neurology in the Chicago Eye, Ear, Nose and Throat College.

Appointment of Dr. Plummer.—Dr. S. C. Plummer, Jr., has been appointed Chief Surgeon of the Chicago, Rock Island and Pacific Railroad Company, vice Dr. William D. Middleton of Davenport, Ia., deceased.

Fees from Dispensary Patient.—Dr. Sidney Kuh secured a judgment for \$20, August 19, for medical services rendered to a charity patient of the free clinic and hospital of the Post-Graduate Medical School. The patient went to the institution in March for treatment for a nervous disorder which had made her blind. As the physician ascertained that she had means, he considered it just that she should pay a reasonable fee.

Typhoid Fever.—During the week ending August 23 the deaths from typhoid fever numbered 53, the number for the previous week having been 45, while for the corresponding week of 1901 only 20 were recorded. The drastic measures employed in food condemnation and the missionary work of education in cleanly, decent American methods of living, pushed by the Visiting Nurse Association and the volunteer inspectors, are telling on the ignorance which, with its twin curse of poverty, is at the bottom of this excessive death-rate from the disease; and notwithstanding that there were eight more typhoid deaths last week than the week before, the Department of Health believes that the maximum has been reached.

Protection of Sight and Hearing of School Children.—The State Board of Health has issued a circular detailing the method by which tests of the sight and hearing of school children in the State may be made. The facts to be ascertained are the following:

- (1.) Does the pupil habitually suffer from inflamed lids

or eyes? (2.) Does the pupil fail to read a majority of the letters in the number xx (20) line of the Snellen Test Types, with either eye? (3.) Do the eyes and head habitually grow weary and painful after study? (4.) Is the pupil probably cross-eyed? (5.) Does the pupil complain of earache in either ear? (6.) Does matter (pus) or a foul odor proceed from either ear? (7.) Does the pupil fail to hear an ordinary voice at 20 feet in a quiet room? (8.) Does the pupil fail to hear the tick of a good-sized watch at three feet, with either ear, in a quiet room? (9.) Does the pupil fail to breathe properly through either nostril? (10.) Is the pupil an habitual mouth-breather? If an affirmative answer is found to any of these questions the pupil should be given a card or letter of warning to be handed to the parent. The board recommends that examinations on this plan be made in every school in the State.

GENERAL

The King's Hospital Fund.—King Edward's hospital fund for freeing London hospitals of debt has received endowments from Lord Mount-Stephen and Lord Strathcona, and is now producing \$50,000 annually, which sum is likely to be increased. The principal amounts to fully \$2,500,000.

Virchow Very Low.—Professor Virchow, the famous scientist, appears to be near his end. The German Medical Weekly regrets to announce on information obtained from the physicians who are treating him that the improvement of last week has not been maintained and that his strength is unmistakably failing. The professor is at Harzburg, in the Harz Mountains, and no one except his family and the doctors can see him.

The Jersey City Hospital.—The Jersey City Police Commissioners adopted a resolution last week transferring the management of the City Hospital to the new Board of City Hospital Trustees. The board was created by legislative enactment last spring, with power to construct a \$300,000 hospital building. Dr. John D. McGill, president of the Hudson County National Bank, opposed the transfer. He charged that the Hospital Act was unconstitutional.

Reform in California.—In nominating Dr. George C. Pardee for Governor the Republicans of California appear to have risen far above the level usually attained in the political affairs of that State. He is distinctly a reform candidate, his nomination having been brought about as one of the results of exposures involving the Gage administration. Dr. Pardee is a physician of excellent education, which he acquired with high honors, both in this country and in Germany. He first attracted public attention as a member of the Board of Health in Oakland, and later as a councilman. If elected it is hoped that he will immediately institute much needed reforms in the administration of affairs relating to public health and sanitation. The continuance of plague within the United States is one of the evils directly traceable to the present maladministration.

Women Physicians in England.—The annual distribution of prizes of the London School of Medicine for Women took place in August before a large assemblage. The value of the instruction given and the character of the students trained both commended themselves to the public at large. The governors of the endowed charities of St. Dunstan's in the East gave a scholarship of £60 a year for three years, and other scholarships of equal and some of greater value were also distributed. The work of the school has steadily progressed during the past year. A due proportion of those students who have presented themselves for examination have passed, and many of them have accepted

important appointments, not only in England but in other parts of the world. Two new appointments of house surgeon and house physician have been made at the Royal Free Hospital; both have been filled most successfully by women. Abroad, much has been done by the students of the hospital. The South African Hospital Commission was partly constituted by Miss Waterson, M.D., and the Hon. Ella Scarlett, and did valuable work. Miss Scarlett received the appointment of medical officer of health to the refugee camp, Orange River Colony, and a large number of old students have received public appointments during the year.

Self-Experimentation among Physicians.—The Evening Post last week had a very suggestive editorial in connection with the recent experiments of physicians upon themselves in the production of disease. The experiment of Dr. Manson upon his son, who has since unfortunately died, might perhaps also find a place in the list. The editorial says: "This willingness to be experimented upon for the benefit of humanity raises a problem in morals which has never been satisfactorily solved. That a man has a possible right to benevolent suicide seems to be indicated by the admiration with which we remember certain martyrs of science—for example, the lamented Dr. Lazear, who voluntarily incurred yellow fever at Havana in order to prove the theory of inoculation by mosquitoes. It should be remembered, however, that in such cases the taking of a desperate chance is morally different from accepting the certainty of death. Very rarely is martyrdom to science so complete and untainted by personal ambition as it was in Dr. Lazear's case. Some of the most striking instances of this kind of courage should be recorded quite as much to the credit of wrath as to science. There is, in fact, a kind of fanaticism which will go to all lengths to demolish a detested theory or to undo a rival scientist. Dr. Koch seems to have the quality of arousing this kind of animosity. Everybody will recall the young professor who drank before his clinic the strongest preparation of the cholera bacillus that the art of man could make. His survival proved at least that he had more than the average German digestion. More recently Dr. Garnault of Paris inoculated himself with bovine tuberculosis in order to prove, against Koch, that it is transmissible to the human organism. His experiment is likely to prove at most that it is transmissible under conditions which practically never occur, and the surgeon's knife will probably save the experimenter from the natural effects of a too successful demonstration. An interview with Dr. Garnault, in a recent *Figaro*, shows that he has a most stoical contempt of death and a most unstoical contempt of Dr. Koch. His risk is assumed rather to prove the German savant an impostor than to advance the cause of medical science. If he should die of the superficial tuberculosis which he has succeeded in producing, he could be called a martyr to science only in the sense in which a willing but unsuccessful duellist can be called a martyr to honor. The value of his experiment would, of course, remain, but the affair at once illustrates the curious complexity even of heroic motives, and recalls the saying of Professor Lounsbury's, that too little credit has been given to wrath as an incentive to research."

Professor Virchow's Museum.—Virchow's political activity necessitated his giving up in 1849, at twenty-seven years of age, his duty as prosecutor of the great Hospital of the Charité, which at the same time serves the university clinics. He was, however, appointed to the professorship of pathological anatomy in Würzburg, and returned thence in 1856 to Berlin as professor. Since that time he has collected and preserved the

vast and scientifically interesting material of the completed sections and provided each preparation with a superscription. Thus is a treasure of 23,066 preparations accumulated and set up in a museum. A similar institute of the same nature does not exist in the world, and the well-known and doubtless as prominent Musée Dupuytren in Paris, in comparison with Virchow's creation, is but a fragment. The pathological museum will become for medical men a scientific place of pilgrimage and each one may derive his instruction therefrom, whether he be occupied in practical work as a medical man, or whether his mind be directed towards the general standpoints of medicine, as investigator or as guardian of the sanitary conditions in the state. How completely throughout and in what minute detail the pathological museum has been planned can be seen by the fact that besides the apartments for the director, assistants, and draftsman, microphotographic rooms have been built, workrooms provided for the mounting of preparations and their temporary conservation, and even a bathroom furnished for the laboratory attendants. Self-dependent as in certain respects this new pathological museum is, it yet stands in organic and local connection with the pathological institute, which, like the whole hospital of the Charité, will be remodeled in compliance with modern demands, and will also in a short time be rebuilt in new and more splendid form. Besides the relation which exists between the pathological institute and the clinical divisions of the hospital, because the necropsies are performed there, various physical, clinical and bacteriological sections will be added separately in the new institute for scientific purposes. All this has been already taken in hand according to plans of the old master Virchow.

Obituary.—John Henry Longnecker, M. D., a retired physician, died recently in his home, on Union Avenue, Islip, L. I., aged eighty years. He was a native of Lancaster, Pa., and was graduated from the Jefferson Medical College, Philadelphia. He practiced his profession in New York, Brooklyn, and for many years at Hudson, Mass. During the war he was assistant surgeon at Annapolis Hospital, and treated among others Union soldiers who had been confined in Libby Prison. For a time he was connected with a Pennsylvania regiment as surgeon. He is survived by a widow and six sons.

Dr. St. George W. Teackle, for many years one of the leading physicians of Baltimore, died August 30 in that city.

Dr. Reuben Morris Sutphen, one of the oldest physicians of Newark, N. J., died in the home of his son, Dr. T. Y. Sutphen, at Short Hills, N. J., September 3, at the age of eighty-three years. He was born near Princeton, N. J., April 25, 1819. His boyhood days were spent at Ontario, N. Y. Settling in New Jersey in 1845, he entered the office of Dr. Voyht of Freehold, later attending the Medical Department of the University of New York, from which institution he was graduated. He practised in Walworth, Wayne county, N. Y., before settling in Newark in 1868. He was a member of the Newark Medical Association, the Essex County District Medical Society, and the New Jersey State Medical Society. He was also prominent in religious circles, and for many years he was an elder in the South Presbyterian Church. He is survived by a widow and several sons.

Fatal Bite of a Weasel.—A milk dealer in Paterson, N. J., was annoyed by weasel that had taken possession of his barn. On August 21st during his attempts to capture the little animal he was severely bitten. About September 1st he developed symptoms of hydrophobia from which he died on the 4th instant.

CORRESPONDENCE.

TRANSACTIONS OF FOREIGN SOCIETIES.

British.

HISTORY OF ECZEMA—KERATITIS, THE BOWMAN LECTURE BEFORE THE OPHTHALMOLOGICAL SOCIETY.

The British societies before adjourning for the summer held a number of interesting meetings. At two of them well-known authorities from the Continent, Unna and Fuchs, were entertained as guests, and for the benefit of our readers their papers are liberally embodied in these notes.

On May 22 Dr. Unna of Hamburg read a paper entitled "The History of Eczema in the Past Century in England" before the Dermatological Society of Great Britain and Ireland. He pointed out that 100 years ago eczema as now understood did not even exist. S. H. Jackson in his "Dermopathology," translated into German in 1794, did not mention eczema. It was true that Aetius had in past times employed the term, but for a different affection. Willan (1798-1815) grouped together a number of cases of vesicular dermatitis due to trauma of chemical or physiological nature—e.g., plasters, vesicants, mercury, etc., and cases due to sun exposure (heat eruption). For this class he chose the name "eczema." It was clear that observation of the cases of mercurial dermatitis gave the chief impulse to this generalization and influenced the description given, for Bateman recommended readers who wished to understand eczema to study works by Alley, Butter and others on mercurial disease. So it was plain from the definition he gave that for Willan eczema was a traumatic, vesicular, non-infectious malady, and clearly Willan was not the originator of the eczema conception of to-day. Had his idea been followed we should now, after 100 years, possess under the name of "eczema" a most instructive and important chapter on traumatic dermatoses. The single inconsequence in the otherwise clear eczema chapter of Willan-Bateman was the admission—in addition to the two forms, eczema solare and eczema rubrum (hydrargyria)—of a third variety, eczema impetiginosum, partly to cover those cases that, starting, for instance, from a blistering plaster, spread over the body, and partly those which in the form of grocers' and bricklayers' itch belonged to Willan's impetigo figurata and so to the eczema of to-day. This form really included more on etiological than morphological grounds, and, following Willan's definition, clearly did not belong to the class of eczema. The mention of these chronic occupation diseases, that showed diffuse inflammation and notable itching, and that were hard enough even to separate from eczema, proved in fact an Achilles' heel. Plumbe (1827) was a strict Willanist, stricter than Bateman, for he rejected Bateman's third variety, eczema impetiginosum. He was the last true follower of Willan, not only in England, but elsewhere. The English authors who followed came more and more under the influence of the rising Parisian school of dermatologists, and notably of Rayer. Following the teaching of Bielt, that Willan had erroneously only described acute eczema and had overlooked the chronic, Rayer added to the three varieties of Willan-Bateman—which, by the way, he largely remodeled—a fourth, namely, chronic eczema. This was an entirely new creation, pieced together by the master mind of Rayer from separate details that in Willan lay scattered principally in the chapters on Impetigo and Porrigo. Rayer's description was based on 11 cases of his own. He was the first to note and to describe the regional modifications, in which he has been since followed by most authors. This great service would have had far greater value had Rayer not mixed up his new disease with Willan's acute eczema and taken the latter as its

"acute beginning." This unhappy amalgamation was due to the fact that Rayer could not have studied Willan properly. Willan and Rayer were describing entirely different affections, and it was the failure of Rayer to appreciate this that led to most of the subsequent confusion. As a result of the French remodeling of English views on eczema it happened that a traumatic, rare, acute, not itching affection became converted into one that was non-traumatic, common, chronic and itching. The naval surgeon J. Green (1835) was the first victim of the confusion in England. He appeared to follow Willan in that he spoke of traumatic eczemas, and even introduced a new one caused by sulphur, but departed from him entirely in saying that such eczemas differed from the proper or constitutional forms in their easy curability. Dr. Unna next referred to the early work of E. Wilson (1842), showing that it was just a selection from other authors, which, owing to its great popularity, served to perpetuate the existing confusion. A. T. Thompson (1850), who edited Bateman's work, was a decided Willanophile, but he showed the influence of the French school when he spoke of an outer and an inner (i. e., constitutional) eczema. T. M. Nelligan (1852) drew attention to the fact that eczema of the face and scalp in children appeared in the strong as well as in the weak, in the scrofulous and in those not so tainted, in the well nourished and in the reverse. And yet he fell back on a constitutional cause for this type. Meanwhile a great step forward was taken in France. Devergie pointed out that Rayer's eczema by no means always commenced with Willan's clear-clustered vesicles and that it often did not show any vesicles in the whole of its course. Hence he separated the two and gave to Rayer's form four fresh symptoms—redness, violent itching, a secretion that stained and stiffened linen, and a *status punctatus*—i. e., fine holes in the skin from which serum poured. It might be thought that with the separation of Willan's and Rayer's eczema and the entire removal of artificial inflammations, even as the "acute beginning" from the latter, the *status quo ante* had been again restored. Hebra, who appeared in the "sixties," had on English dermatologists even more influence than Devergie. On the strength of very insufficient experiments with croton oil and other irritants he managed to reintroduce into the eczema chapter the traumatic dermatoses that Rayer and Devergie had so carefully rejected, and his great authority covered for many years all that was untrue and incongruous in the muddle called eczema. E. Wilson was entirely under Hebra's influence, and this in spite of the fact that he was the first to introduce a chapter on traumatic skin affections. He freed himself, however, entirely from Willan in that he held, with Devergie, the vesicle as an inconstant, non-essential feature. T. Fox (1873) believed himself a Willanist, and in consequence announced his intention to oppose the authorities of his time. But his work was full of incongruities. He was no true Willanist, only the greatest Willanophile among moderns. M. Anderson (1874) was the first, after Hebra and Wilson had already and occasionally recognized the scaling patch as the initial symptom of eczema, to declare it to be the most important form of commencement. Dr. Unna here pointed out how unfortunate it was that Rayer called his disease "eczema," and how unfair it was to ascribe to Willan the confusion that would have been avoided had his ideas been followed. Dr. Unna then passed on to consider briefly his own work. Hitherto Willan's eczema alone had possessed a clear etiology, while that of Rayer was the plaything of unproved hypotheses and unfruitful theories. In 1890, before the British Medical Association in session at Birmingham, Dr. Unna had declared Rayer's eczema on clinical grounds to be a para-

sitic affection. After 12 years in which he had confirmed his theory he had the satisfaction of knowing that in England Morris, in America Elliot, in France Leredde, and in Germany Bockhart, had in great part accepted and enlarged his views. Hence the future study must lie in bacteriological domains and the new century could already record a start. Possibly the progress in chemistry and physiology might be of even greater importance. Clinical study alone could do no more. It must proceed hand in hand with microscopical, bacteriological and chemical investigation if the future development of the eczema conception was to be possible.

E. Fuchs of Vienna read the Bowman lecture before the Ophthalmological Society June 13, 1902. Bowman's name, said Professor Fuchs, would be forever connected with the development of anatomy, physiology, and ophthalmology, and as far as the eye was concerned Bowman's membrane and Bowman's tubes would perpetuate for all time his name in the memory of the student of medicine. In discussing keratitis the lecturer declared his intention of confining himself to the consideration of recent disease, showing what anatomical changes corresponded with visible signs, such as opacity, loss of brilliancy, etc. The transparency of the cornea allowed a closer comparison between clinical and microscopical appearances in this than in any other structure, especially with the aid of a lens or corneal microscope. Diffuse opacity would be found to correspond with an infinite number of minute gray points representing swollen corneal corpuscles, aggregated lymph-cells beside them, or accumulations of corneal corpuscles in lymph-spaces. The surface, from being smooth and brilliant, became dull and stippled at the slightest disturbance of underlying tissues corresponding with a change in the epithelial layer. In the normal structure the nutrition of the epithelial layer was provided for by osmosis from the corneal tissue through Bowman's membrane, and the regeneration of cells by division of the basement and middle layers. In health this was slow, as evidenced by the scarcity of dividing nuclei. On account of the exposed position of the corneal epithelium, its pliant, delicate nature, and its loose attachment to subjacent structures, abrasions were common, and rapid and extensive exfoliation took place in inflammation. Its vitality was further lowered by the low temperature resulting from surface evaporation and its dependence for nutrition on non-vascular tissues. This process of osmosis was its chief defense and the integrity of the epithelium was the chief defensive agent against the intrusion of microbes. The close and persistent growth of these surface cells tended to level all irregularities, producing a thicker layer where there was loss of substance and a thinner one over any protrusion. This was illustrated by drawings, as was also the rapid development of these cells, preventing direct union of the tissues after a cataract extraction of four days' standing, and having already penetrated the wound as far as Descemet's membrane. A drawing was shown illustrating a still further development in which the superficial corneal epithelium had penetrated to and lined the entire anterior chamber, covering both the iris and back of the cornea. This drawing was from a cataract extraction of several years' standing. This condition practically represented cyst of the anterior chamber; the tension was raised. Four such cases had come under the lecturer's observation, and he suggested that this might be the explanation of increased tension after cataract extraction where there was no other cause of glaucoma. There also occurred small epithelial cysts in the root of the iris continuous with the surface epithelium and representing the blind end of its invagination. These would in time develop into iris-cysts, and

were, except in distribution, analogous to the chamber-cyst just mentioned. Cysts of the iris occurring after penetrating wounds were always due to this kind of intrusion of the external epithelium. Another instance of this intruding tendency was furnished by cases of old leucoma; in such cicatricial tissue there often occurred calcareous deposits which consolidated into calcareous plates. These, at first intimately connected with the contiguous tissue, presently separated from it by shrinkage and lay in it like a foreign body. A drawing showed the surface epithelium penetrating to this space, surrounding the plate, and effecting its separation. Another drawing showed the process nearly complete, the epithelium on the outer aspect having necrosed, while on the deep surface it separated the mass from the living connective tissue, thus at the same time protecting the eye from external agencies by a continuous epithelial layer. The vital energy of this epithelium was greater at the periphery in proximity to the nutrient vessels. When uniformly affected it was speedily thrown off in the center, but grew exuberantly at the margin, as in keratomalacia and neuroparalytic keratitis, and most strikingly in marginal ulcers where the epithelium was seen to push quickly towards the bottom of the ulcer peripherally, whereas the central margin remained bare and infiltrated. On this account many ulcers tended to progress towards the center but not towards the margin as in fascicular keratitis. Disturbance showed itself by dulness (unevenness) or haziness (opacity) of the epithelium; where the epithelium was raised in places the small vesicles appeared if the subjacent cornea was clear. The opacity was due to abnormal fluid either between or within the cells. It commonly occurred between the cells in glaucoma (edema of epithelial layer), separating first the basement and then the superficial cells, and might form vesicles. A figure from Grieff showed this and swelling of the cells from imbibition of fluid. The cells might burst and leave depressions while the swollen ones projected, thus producing an uneven surface. The stippled appearance in glaucoma, iridocyclitis, and interstitial keratitis was thus accounted for. The entire layer might be affected, producing a homogeneous mass which separated. Absorption occurred quickly, even within 30 minutes, under eserine. The superficial cells separated and fell off. In neuroparalytic keratitis the desquamation was specially rapid, being due largely to exsiccation, but it occurred from nerve changes in man where this was prevented. The change occurred principally in the center while there was proliferation at the margin, the cornea being left uneven with a stippled appearance. Only the basement layer might be left and the cells altered in shape, being long, short, or oblique, or the loss might be total, as in conjunctivitis and inflammation of other mucous membranes (desquamative catarrh): This condition endangered the cornea by facilitating the entrance of micro-organisms and conjunctival disease was often followed by corneal disorder. Change in the epithelium was the cause of such disorders of vision as colored halos round lights, as in glaucoma and cocaine instillation, especially where this had been long continued or the eye had been left exposed. The epithelium became opaque and dull and desquamated. The lecturer never entrusted patients with cocaine, particularly when suffering from keratitis. Thinning of the epithelial layer occurred from pressure of the lid, the surface remaining smooth, as it did in atrophy from insufficient nutrition, the number and size of the cells being diminished. Where calcareous deposits occurred in corneal cicatrices bacteria might invade the cornea, causing necrosis. This was the explanation of the rapidly destructive ulcers in old leucomas (atheromatous ulcer, sequestering cicatricial keratitis) resulting in perforation and panoph-

thalmitis. This might also occur from within, as in corneal degeneration. Local areas of the kind resulted from irritation or might develop after cataract extraction, producing inflammatory areas with lymph-cells which might ulcerate or disappear. Exsiccation, if superficial, produced opacity; if deep, xerotic keratitis. To sum up the causes of these superficial changes, they might be due to conjunctival disease causing damage by secretion—e. g., gonorrheal ophthalmia; to deeper disease in the tissues, as in glaucoma, iridocyclitis, panophthalmitis, through alterations in pressure, circulation and quality of lymph; or to degenerative changes in the cornea, which varied much with the stage and malignancy of the pathological process. The dotted appearance in keratitis as seen with a lens differed from the haziness due to changes in the media or deposit of fibrin at the back of the cornea, which always appeared uniform, this appearance in the cornea being only produced by the imbibition of fluid. Striated keratitis was due to swelling (after cataract extraction) producing folds at the posterior surface of the cornea. Swollen tissue on the surface might be clear and free from ulceration, though necrotic. The bluish swelling in newly born children and in glaucoma were probably due to imbibition. The slow changes in old men (after sixty years of age), senile sclerosis, producing ultimate blindness, came from abnormal liquid in the cornea which impeded the lymph flow, probably due to a change in the general nutrition or to increased permeation of the aqueous humor into the cornea. A change in the epithelium was superadded, and the slow affection of both eyes suggested some general agent. A uniform infiltration of the cornea with lymph-cells produced a uniform opacity. An injurious agent in the aqueous humor, as in commencing panophthalmitis or iridocyclitis, caused increased circulation at the margin, two currents of lymph-cells emanating from the vessel of the limbus and the anterior ciliary vessels which resulted in an annular thickening. The entire cornea might be affected from a wound or ulcer, the change clearing up, concentrating, or becoming marginal. In the latter case a ring-shaped thickening due to infiltration 1.5 mm. in width and about this distance from the limbus occurred, and was a rare consequence of ulcer or panophthalmitis.

SOCIETY PROCEEDINGS.

THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

Eighth Annual Meeting Held in Washington, D. C., June 2, 3 and 4, 1902.

(Concluded from page 431.)

SECOND DAY—Tuesday, June 3.

Report of a Case in which Laryngeal Symptoms Complicated Purpura Hemorrhagica.—Dr. Joseph T. Gibb of Philadelphia reported this case. The patient, a man of forty-two years, had been well up to three weeks before admission to hospital on November 3, 1901. At that time he had been vaccinated, and 10 days later the legs became swollen and a hemorrhagic rash appeared upon them. About this time there was a bloody discharge from the bowel. There were subsequent crops of hemorrhagic spots, and eventually the urine became bloody. On December 19 the speaker had first seen him because of an attack of dyspnea and crowing respiration that had existed for 36 hours. The entire larynx was red; the breath sounds were weak and there was marked laryngeal stenosis. On the following day after vomiting much chocolate-colored mucus the breath became very normal, and the larynx then showed less infiltration and the surface of the mucous

membrane was covered with fluid blood. An application of cocaine and adrenalin gave marked but temporary relief, the hemorrhage recurring, and the patient dying the next day of exhaustion. Evidently the dyspnea was due to hemorrhagic edema of the submucosa of the larynx, similar to the subcutaneous purpuric spots in simple cases. The relation of the illness to the vaccination was interesting but by no means clear. The possible relation between the adrenalin and the last hemorrhage was also worthy of consideration.

Hemorrhage in Nasal Operations.—Dr. John O. McReynolds of Dallas, Texas, instead of reading the full paper on this subject, reported one case of severe hemorrhage occurring after the use of adrenalin. The case was that of a man of 25 years, from whom he removed without difficulty an exostosis situated rather high in the nose. The hemorrhage occurred almost immediately after the patient's leaving the office, but he did not see the man for about two hours, and then he was almost exsanguinated. The hemorrhage was controlled by packing the posterior nares.

Dr. W. Freudenthal of New York exhibited a device which he used for controlling hemorrhage during and after operation. It consists of a double ice bag which is applied like a saddle over the nose, and is strapped around the head. In addition, he obtained valuable assistance from the use of stypticin internally.

Dr. J. A. Thompson thought the hemorrhage was due to injury of one of the small arteries of the septum. Hemorrhage could be much more easily controlled by the use of cotton saturated with a styptic than by the use of gauze.

Dr. J. A. Stucky said that adrenalin should be used in the strength of 1 to 6000 or 8000. He was accustomed to control nasal hemorrhage by the use of a little strip of dental rubber over which is placed a piece of Bernay's sponge or splint.

Dr. H. Bert Ellis of Los Angeles, Cal., said that according to his experience hemorrhage was much less likely to occur after adrenalin alone than after the combination of adrenalin and cocaine. Patients put on the chloride of calcium prior to operation were rarely troubled with secondary hemorrhage.

Dr. M. A. Goldstein said that it was his custom to saturate the gauze with oil or melted vaseline in order to make it impervious, and hence, suitable for controlling hemorrhage. He believed the Simpson modification of the compressed cotton splint, shaped in the form of a nasal plug, was a very satisfactory means of controlling nasal hemorrhage.

A Physiological Statement of some of the Symptoms of Mouth Breathing.—Dr. William L. Ballenger of Chicago presented this paper. He said that examinations of guinea-pigs which had been kept in an atmosphere saturated with starch powder and nitrate of silver showed a remarkable thickening of the lining of the air vesicles, and this had led him to suspect that possibly a pathological change in the air vesicles might in some way cause an auto-intoxication which would find expression clinically in mouth breathers. In this class of cases the respiratory function of the nose was lost, and he did not doubt that this loss resulted in certain changes in the respiratory apparatus of the lung, which impaired its capacity to carry on the interchange of gases. Faulty metabolism necessarily resulted, and carbon dioxide accumulated in excess in the blood, and then acted as a violent poison to the leucocytes. The scavenging functions of these cells are thus impaired and the "half way" products of oxidation are left to circulate through the system. Oxygen being taken up in deficient quantity still further adds to the toxic properties in the blood and gives rise to the nervous and de-

velopmental phenomena so familiar in mouth-breathing children.

It seems rational, therefore, to him to assume that the symptom complex of mouth breathers is largely due to some change in the air vesicle walls of the lungs, whereby the normal interchange of gases (oxygen and carbon dioxide) is interfered with.

Dr. Eugene L. Vansant of Philadelphia thought the cases in which the respiratory function was abolished were very rare. In a case of severe adenoids in a child asleep there would still be found nasal respiration. If these persons were true mouth-breathers there would not be much difficulty; it was because they remained nose-breathers that nervous disturbances arose. There was not the slightest doubt that there was immense thickening of the epithelial lining of the pharynx and larynx, but he was disposed to doubt that such thickening extended to the air cells except in severe cases of long standing.

Dr. J. A. Thompson said that the interchange of gases was practically an osmosis, and it was well known that this would not take place through a dry membrane. Where nasal respiration was abnormal the pulmonary alveoli became unnaturally dry, and this was probably one of the features in the deficient osmosis and oxidation of the blood.

Dr. W. Freudenthal of New York said that some years ago he had made a number of experiments on this subject, and had found that children with pronounced adenoids gave off about one-ninth or one-eighth of the normal quantity of moisture. Four months after the removal of the adenoids one boy gave off about the normal amount of moisture from the nose. If the nose failed to supply the moisture to the air this would be supplied for a time by the pharynx, but the latter would soon fail also.

Dr. Ballenger, in closing, said that it was not necessary to have complete nasal obstruction in order to produce the pathological conditions discussed in his paper. The point made by Dr. Thompson seemed to him very well taken.

Electric Light in Diseases of the Respiratory Organs.—Dr. W. Freudenthal of New York read this paper. At first he had hoped to affect the deeper tissues by the actual passage of the bactericidal rays into them, but it was found, that these just penetrate the epidermis and cutis. In studying the therapeutic effects of the electric light one must distinguish between the incandescent and the arc light. The author said that he had been experimenting on this line as early as 1889. He had found the arc light preferable even for the larynx. He made use of the ordinary search light, in front of which the patient sits at a distance of six or eight feet. Most of the screens suggested for removing the heat were objectionable because they absorbed in large amount certain other important rays. He used the electric light in the treatment of both laryngeal and pulmonary tuberculosis, and although he had never cured an advanced case by this means the treatment was of value just as was the use of morphine, heroin or hydrotherapy; indeed, the electric light treatment stood on the same level as hydrotherapy, but was superior to the latter because it relieved pain and facilitated expectoration. Because of the neurotic element in cases of hay asthma the results of the electric light treatment had been even more conspicuous.

Dr. H. Holbrook Curtis asked the effect of direct sunlight on laryngeal phthisis.

Dr. Robert Levy said that he had never been able to satisfy himself from the published reports that the application of sunlight or artificial light was an important adjunct to the treatment. Equally good results, he

thought, could be obtained in high altitudes where sunlight was most abundant.

Dr. Freudenthal said that he had applied sunlight and was accustomed to advise his patients to expose themselves to sunlight, preferably while undressed.

Symposium on Diseases of the Accessory Sinuses.

—Dr. Robert C. Myles of New York introduced this symposium by a general paper. He said that the chief functions of the accessory sinuses were to supply fluid secretion, warm the air passing through the nose and act as a sounding board. In the majority of cases empyema of the antrum of Highmore was easily diagnosed, and he valued highly as one of the aids for this purpose the method of transillumination. The passing of a trocar through the middle or inferior meatus would often confirm the diagnosis. Where there were polypi, thick mucus and colloid material this method would fail. He believed he had been the first to insist upon not employing the radical surgical treatment of antral disease by repeated and severe curettage. Such treatment often aggravated the condition. In frontal sinus cases the diagnosis was usually made with difficulty, yet injection of normal salt solution often cleared up the diagnosis. The morning headache was generally significant, and was due to retention of the gases above the thick secretions which flowed over the mouth of the infundibulum on assuming the erect posture, and was gradually relieved by the pressure of the gas, forcing the secretion down into middle meatus. Total obliteration of the sinus yielded brilliant results where the sinuses were small; in other cases part of the anterior wall should be removed and the mucosa curetted, a large opening being made from the sinus to the nose. The diagnosis of ethmoidal disease was usually very plain. A soft silver probe was of great value in ascertaining the condition of the cells. All polypoid tissue should be removed and also the floors of the sinuses. Disease of the sphenoidal cells was easily diagnosed, and the results of treatment were satisfactory. Complete removal of the posterior end of the middle turbinal would usually demonstrate the point from which pus made its exit. Extensive removal of the anterior wall and repeated excision of the membrane forming over the opening usually cured these cases.

Ethmoidal Cells.—Dr. Eugene L. Vansant of Philadelphia presented this paper. He said that these cells varied greatly in size, number and shape. The anterior cells usually communicate with the middle meatus by several ostia. The posterior openings communicate with the superior meatus. Occasionally the roof of the maxillary antrum contains one or more cells. The situation of the ethmoidal cells rendered them particularly liable to involvement by inflammatory processes extending from the nasal passages. Of the new growths found here myxomata were the most common. Catarrhal and suppurative inflammations of these cells most commonly required attention. Their existence was frequently unsuspected. Catarrhal inflammation was usually associated with an acute rhinitis or with influenza. This form of inflammation usually terminated in resolution. Most cases of suppurative ethmoiditis did not come under observation until already chronic. Granulations and polypoid processes not infrequently spring up in the mucous membrane. In most cases the patient complained of constant pain in the forehead or temporal region in addition to the discharge. Drainage was rarely perfect, and the symptoms varied somewhat according to the amount of secretion retained. The prognosis was very uncertain. All intranasal obstructions and nasal polypi must be removed. It was ordinarily best to remove the anterior end of the middle turbinal. If the posterior cells were involved the entire middle turbinal should be removed. If the cells were

found necrotic or filled with granulations, a thorough curettement should be done, and a light packing inserted to avoid hemorrhage. Syringing the cells with hot air was also a useful expedient. Hot water applications over the root of the nose and face added to the patient's comfort.

Sphenoidal Cells.—Dr. Cornelius G. Coakley of New York read this paper. He said that the first reference he had found to this affection was in connection with an autopsy record in 1872, and Schaffer, in 1885, had been the first to detect and treat this condition in the living. Influenza or severe rhinitis were most commonly responsible for acute inflammation of these cells. There were usually fever, rigors and headache, and sometimes pains referred to the back of the orbit were the only symptom complained of. Examination of the nasopharynx would usually show a thick, tenacious mucus, but it could not be seen to come from the sinus. The nasal mucous membrane should be kept thoroughly contracted by the frequent use of cocaine and adrenalin, and the nose should be irrigated with saline solution having a temperature of about 120° F. If this treatment did not give relief some more radical measure would be demanded. In the chronic cases examination of the anterior portion of the nose might not show any pus, but pus would usually be found issuing from the posterior naris. By means of a fairly stiff graduated copper probe he endeavored to enter the sphenoidal sinus. At the depth of 7 cm. the end of the probe would usually reach this sinus, and on entering the sinus it could be pushed one to one and a half centimeters further. A canula was then passed into the cavity and the latter irrigated with warm sterile normal saline solution. If the fluid running out were pus-laden the diagnosis was complete. With a Bryan's gouge and curette the anterior wall below the ostium was broken down. Frequently the removal of a part or all of the middle turbinate was required before catheterization and irrigation could be accomplished.

Antrum of Highmore.—Dr. F. C. Cobb of Boston read this paper. He divided cases of antral disease as follows: (1) empyema secondary to frontal or ethmoidal disease; (2) empyema due to decayed teeth; (3) empyema due to foreign bodies, such as rubber injected by dentists, or to eruption of teeth in or about the antrum; (4) empyema due to obstruction by new growths or polypi; (5) suppuration resulting from tumors and (6) empyema due to syphilis, and resulting in necrosis generally of some portion of the antral wall. The apparent absence of teeth did not eliminate an antral disease arising from diseased roots left behind beneath the gum and often overlooked. Syphilitic empyema was usually diagnosed by the odor and the softening of the bone, and its appearance in the discharge. Antral disease was often confounded with dentigerous cysts. The walls of such cysts were bony and offered the same resistance to the probe as do the walls of the antrum. If on tapping and washing out the antrum a flow of pus occurred within an hour or two, one might be sure that it came from some source outside of the antrum. The operation of Lothrop, throwing open the antrum into the nasal cavity, was probably the best of this class of operations. Better still was the making of a wide opening into the canine fossa, leaving a flap which may be stitched up afterward, and then making an opening so as to secure drainage through the nose. In the latter a wick should be placed.

The Diagnosis and Treatment of Frontal Sinus Disease.—Dr. Lewis A. Coffin of New York presented this paper. In well marked cases there would be persistent frontal headache with tenderness over the orbital region, and examination would show the

nasal mucous membrane swollen and boggy and pus probably oozing from the middle meatus. Transillumination would assist in the diagnosis. The chronic cases were not so easily recognized. In many cases an exploratory operation was necessary and justifiable to establish the diagnosis. By the use of a specially devised trephine a bone flap could be readily raised. As primary union occurred after this operation no deformity resulted. Where disease was found drainage should be established by one of several methods. He favored the drawing down of a small rubber tube through the fronto-nasal duct. The closed method was followed by many relapses. For exploratory purposes the opening should be made as near as possible to the median line. The exploratory openings should be situated just over the inner canthus of the eye, and if necessary, the opening should be enlarged at the expense of the inferior wall. The closed method should be used only in cases in which there is obstruction of the fronto-nasal duct which can be easily removed. There was no occasion for establishing drainage through the nose.

The Technic of Frontal Sinus Operations; Report of Three Cases without Nasal Drainage.—Dr. H. Holbrook Curtis of New York presented this paper, but for lack of time only reported the cases and commented briefly upon them. He exhibited a dressing that he had found exceedingly useful in packing these sinuses, *i. e.*, zephyr wool deprived of its fat so as to make it absorbent.

Dr. Curtis also exhibited an electric sinus lamp and a cheek retractor, which he highly recommended. He particularly dwelt upon the necessity of obliteration of the sinus, and said that the fear of a deforming cicatrix was the bugbear of sinus operations. He considered that an operator should understand plastic surgery, do bold work and rely on paraffin and his knife to obliterate the depression and the scar.

Dr. John O. Roe of Rochester presented a series of skulls to show the wide variations in the sinuses, thus emphasizing the necessity of modifying the method of treatment to suit the individual case. Not only were there marked variations in the location, size and direction but in the presence of septa and in their number. In some cases there was almost no frontal sinus, showing the danger of using a drill which under such circumstances, would pass through and injure the meninges. He had devised a curved drill run by an electric motor, an instrument by means of which it was easy to enlarge the natural channel from the frontal sinus into the nose. The end of the drill was protected on one side by a shield so as to enlarge but one side of the passage and thereby avoid a subsequent closure of the passage.

Dr. James F. McCaw of Watertown, New York, spoke of the case of a lady who had had all her teeth extracted eighteen years before coming under observation. Because of a chronic discharge and the presence of roughened bone, an incision was made along the alveolar process, and he was surprised on coming down upon a tooth lying in a cavity of the alveolar process and parallel to it. The tooth was removed and the cavity curetted, and since then there had been no trouble.

Dr. Thomas J. Harris of New York said that in his hands transillumination had proved of very little value in connection with the frontal sinus. In many cases in which pus had been found at operation there had been no darkening at all on transillumination, and in other instances when there was darkening little or no pus had been found. He agreed with Dr. Coffin that in each case one must decide whether the open or closed operation should be selected. He firmly believed that

in cases in which it was not possible to find marked disease of the ethmoidal cells, the quickest and most satisfactory results would be attained by doing the open operation, as described by Dr. Coffin. This operation could be done thoroughly, and yet leave practically no deformity.

Dr. Sargent F. Snow of Syracuse said that the symposium had deeply interested him. A large majority of these frontal sinus cases would get well with better drainage into the nasal passages; not that he recommended the internal exclusive operation only in all cases. Quite recently he had discovered that a number of these chronic cases had an underlying syphilitic taint, and that a thorough course solved the problem. Investigation along this line is replete with surprises.

Dr. Thomas H. Farrell of Utica asked for experience regarding the production of distressing symptoms by adrenalin.

Dr. R. C. Myles said that while small frontal sinuses did well under packing, large sinuses would require packing for an indefinite period, and would fill up with granulations very slowly. Some people could be kept very comfortable by having a permanent opening in the antrum.

Dr. C. G. Coakley said he had found the periosteum so much diseased in many cases that he doubted if gentle curettage would suffice. Many patients who had suffered for a long time from antrum disease were greatly improved by a change of air. He had tried the X-ray in cases of disease of the accessory sinuses, but in only one instance had he derived any material aid from this source except for the determination of the presence and size of a sinus. His rule was not to irrigate except at the close of the operation. The packing was changed as infrequently as possible because each change of dressing disturbed the granulating process. By operating near the inner angle of the eye the resulting scar would be almost imperceptible.

Dr. L. A. Coffin said that he could not see how Dr. Roe's drill could be made to pass down into the fronto-nasal duct. In one case in which there was pain and a shadow on transillumination, although no symptoms pointing directly to the nose, on opening the sinus an angioma was discovered.

A Study of Chorditis Cantorum Nodes with Special Reference to Etiology and Treatment.—Dr. Frank E. Miller of New York read a paper on this subject, and illustrated it by lantern slides and by the presentation of several patients, together with a demonstration of the exercises employed in carrying out the treatment.

Primary Treatment of the Uvula and Soft Palate, and Treatment with the Roentgen Ray.—Dr. James F. McCaw of Watertown, New York, read this paper, reporting a case. A screen of block tin with a cylinder of the same material served to direct the X-ray upon the desired part. The diseased surface had healed very satisfactorily under the treatment, the chief feature of the healing process being the comparative freedom from cicatricial tissue, and the slight degree of contraction.

Dr. C. G. Coakley said that he had used the X-ray in a case of epithelioma of the superior maxilla, supposed to be of about three weeks' duration. The man refused surgical operation, and was treated by the X-ray for a week by Dr. William James Morton with some improvement. The patient then went away for a short time on business, and on his return the disease was found to have advanced very considerably.

Dr. Otto J. Stein of Chicago referred to a case of leucoplacia of the soft palate and mouth that he had treated for about three months by the usual method without benefit. Last December the X-ray treatment of the case had been begun by Dr. Pusey, and after two months he had reported the case as a failure. After

another period of two months the result was still negative. In Dr. McCaw's case it seemed difficult to determine how much of the good result was due to the surgical measures and how much to the X-ray.

Dr. McCaw said he believed most of the good results that would be obtained from the X-ray in this class of cases would be after excision of the growth. The result would also vary somewhat depending upon whether a "hard" or a "soft" X-ray tube were used.

Report of a Case of Laryngeal Papilloma in a Child, with Remarks.—Dr. C. Dunbar Roy of Atlanta, Ga., presented this report. He had used the method of spraying the larynx with alcohol, as recommended by Dr. Delavan, and with good results in some instances. Various methods of treatment were discussed by the author. He advised that the children should be kept under observation and the milder methods given a fair trial before resorting to surgical intervention. In adults, especially if there were interference with the breathing, the endolaryngeal method might be tried. In children prolonged tracheotomy might be required. Laryngotomy should be done only when all other methods had failed.

Dr. Wendell C. Phillips of New York insisted upon the great care necessary in making the diagnosis of what seemed to be benign neoplasms of the larynx because many of these proved to be malignant. In one such case occurring in his own practice, the growth proved to be an epithelioma in a very early stage. Almost any one observing this growth would have declared it to be a papilloma, yet microscopical examination showed its true nature.

Dr. Thomas J. Harris said he wished to emphasize the value, in prolonged papillomatous formations, of opening the trachea. A case was recalled in which the growths had been removed repeatedly by Dr. Nichols endolaryngeally, and in treating which alcohol had been used unsuccessfully. Prolonged tracheotomy was then resorted to in order to give the part a prolonged rest. This succeeded admirably.

Dr. C. G. Coakley spoke of the similarity in structure of so-called papillomata and syphilitic growths. He was in favor of removing the papillomata in both children and adults as soon as possible. Where the base was broad they were, of course, difficult of removal. It was his habit afterward to make use of alcohol in order to postpone recurrence. Where the attachment was small one removal would often suffice.

Dr. W. B. Shields of St. Louis referred to the case of a physician of seventy years upon which he had operated twice, supposing the growth to be a papilloma from its gross appearance. Microscopical examination showed it to be a sarcoma.

Dr. Roy, in closing, said that he was opposed to the method of Coakley and Phillips of removing a portion of the growth for examination, because this afforded an excellent opportunity for auto-intoxication and for the change of a benign into a malignant neoplasm. He was not in favor of removing a growth in the larynx as soon as found; it was better, in his opinion, to watch it carefully and test the effect of various medicinal applications.

Abductor Paralysis of the Larynx.—Dr. D. J. Gibb Wishart of Toronto, Ont., read this paper, reporting a case of primary abductor paralysis occurring in a person apparently suffering from *tabes dorsalis*, and giving a history of syphilis. The crico-arytenoid articulation in this case did not seem to be responsible for the position of the cords. The patient was tracheotomized and the tube had been worn for several years with great benefit. Resection of the recurrent laryngeal nerve was justifiable if the disease were steadily progressive. Both iodide and arsenic had been given internally. Dr. Wish-

art said that he had seen a second case last winter with a history of esophageal stricture in the practice of Dr. H. D. Bruce. The patient refused operation and remained under observation only a few days.

Report of a Case of Epithelioma of Tympanic Cavity and Involving the Mastoid.—Dr. W. H. Haskin of New York reported this case. The patient was a woman of forty-two years, first seen in April, 1901. She complained of intense pain in the left ear, radiating over the head and down the neck. There was also an offensive otorrhea, and a history of a discharge from the ear at intervals for 30 years. A polyp was removed with a snare. Subsequently there had appeared what was thought to be a malignant growth. A complete mastoid operation was done, and pus found in the tip of the mastoid and disease in the squamous portion. Examination of the tumor indicated that it was not malignant. On June 24, the patient was readmitted with a swelling below the ear. The sinuses were opened up, and the granulations removed were then reported to be epitheliomatous. When seen on April 15, 1902, there were large secondary growths around the ear.

THIRD DAY—WEDNESDAY, JUNE 4.

Drawings of the Venous System of the Neck.—Dr. Edward B. Dench of New York exhibited two drawings showing the anatomical relations in a subject recently dissected of the right and left internal jugular veins. Upon the right side the internal jugular was of small size and gave off but one branch, the common lingual and facial trunk, throughout its entire extent. Almost the entire return circulation from the head and face was carried on through the left side. The external jugular and anterior jugular were very large as were also the lingual and facial veins. The thyroid and laryngeal branches were in like manner exceedingly well developed. Almost all of the return current from the head and face passed through the superficial and deep vessels of the left side. The drawings were of interest from the fact that the otologist is frequently called upon to excise the internal jugular vein for thrombosis of the lateral sinus. With a distribution of the vessels such as was shown in the plates exhibited, ligation upon the left side would have been attended with considerable difficulty, and would only have been efficacious had all of the collateral branches of the vein been secured. The plate was presented in order to bring to the attention of the society the very marked anomalies which might exist in the venous circulation in this region.

Specimen of Tubercular Larynx.—Dr. Thomas H. Farrell of Utica presented a tubercular larynx obtained postmortem from a case that he had observed at intervals for five years. The ulceration was found to encircle the larynx with the exception of a small strip on the posterior part of the body of the cricoid. The specimen was interesting because in spite of the long period of infection the posterior commissure was not involved, and the appearance bore considerable resemblance to syphilis.

Outfit for Mastoid Cases.—Dr. Wendell C. Phillips of New York said that about two months ago, at the suggestion of Dr. J. F. MacKernon of New York, an outfit had been prepared by Van Horn & Co. of New York for use in mastoid cases. This, as modified by himself, was exhibited to the society. The outfit was kept in stock, and could be procured on telephone order or on prescription. The outfit consisted of all necessary appliances, dressings and medicines necessary for any mastoid operation.

Pus Examination in Middle Ear Suppuration.—Dr. Phillips also presented this paper. He said that modern practice favored the routine bacteriological examination of all cases of suppuration of the middle ear; this ex-

amination to be made immediately after paracentesis so as to eliminate organisms subsequently introduced from without. The micro-organisms found their way into the middle ear through the inflamed Eustachian tube. Some of the most virulent of these organisms were frequently found in the Eustachian tube, and even as far as the antrum without any attendant morbid process. It had been demonstrated that they might even be found in the circulation without giving rise to pyemia or septicemia. From these facts it was evident that other factors, such as alterations in the resisting power of the patient and in the nature of the pabulum on which they live, must be necessary to excite a morbid process. Several varieties were apt to be found in the same specimen, and hence it was the rule for the bacteriologist to state which organism predominated. Some of the organisms found in the pus from middle ear disease are: The micrococcus lanceolatus, the pneumo-bacillus of Friedlander, the streptococcus pyogenes, the staphylococcus pyogenes aureus, albus and citreus, the Klebs-Löffler bacillus, the tubercle bacillus, the gonococcus, the bacillus of influenza and the diplococcus intracellularis meningitis. In the examinations that he had had made he had been surprised at the frequency with which the last named bacillus had been present. In one of his cases the smegma bacillus had been mistaken by the first examiner for the tubercle bacillus. Many clinicians had reported that in the cases in which the pneumococcus was present complications were very apt to arise, and while this was true his experience indicated that the staphylococcus, either alone or in combination, was the most virulent.

Dr. W. H. Haskin of New York said that in a case which he had under observation he had found time and again smegma bacillus, and had been impressed with its close resemblance to the bacillus of tuberculosis. However it was rarely if ever found singly; the tubercle bacillus was very rarely found in middle ear disease, and he believed in many of the reported cases this error had been made of confounding the smegma bacillus and the bacillus of tuberculosis.

Dr. E. B. Dench said that an early bacteriological examination in an acute case proved very helpful in making a prognosis, particularly as regards mastoid complications and infection of the lateral sinus. They had found at the New York Eye and Ear Infirmary that in cases of streptococcus infection there was very apt to be mastoid involvement. In these cases it was now their practice to make no effort to abort the mastoid inflammation except by incision of the drum. If the case did not promptly show signs of improvement the mastoid was at once opened. Mention was made of a case in which the symptoms had developed within a few hours, and the examination showed a streptococcus inflammation. Only one ear was affected at first, and the other drum membrane appeared perfectly normal, yet within two hours the membrane of the second ear became inflamed, and streptococci were found on this side also.

Dr. M. D. Lederman of New York said that he had had examinations made in several cases of chronic supuration, and the bacillus of meningitis had been found. The pathologist did not attach any special significance; where there were symptoms pointing to inflammation of the bony structure in these cases it was well to operate early.

Dr. John M. Ingersoll asked what was the effect of the colon bacillus in these cases?

Dr. C. R. Holmes of Cincinnati said that the importance of such examinations could not be denied, yet unless such examinations were made by experts the results would be misleading. They should be made a matter of routine.

Dr. Phillips, in closing the discussion, said that it doubtful about the advisability of doing a mastoid operation, the finding of numerous streptococci should decide in favor of immediate operation. He had had almost no personal experience with colon bacillus infection in these cases.

Case Showing Deformity After Double Mastoid Operation.—Dr. C. R. Holmes of Cincinnati presented a lady to show the deformity left after a very extensive double mastoid operation done five years ago.

Two Cases of Mastoiditis, One Resulting in Thrombosis of the Cavernous Sinus, the Other Complicated with Tumor of the Cerebellum Simulating Abscess.—Dr. Ewing W. Day of Pittsburgh read this paper. The first case was that of a child of eleven years admitted to the hospital on January 12, 1901, in a septic condition. It was at once operated upon, but by the following day the temperature had risen to 104° F. A pocket of pus was found and evacuated. On the morning of the twelfth day the right eyelid was swollen and discolored, but the ophthalmoscopic examination was negative. A diagnosis of infective thrombosis of the cavernous sinus was made. An exploratory incision into the orbital cavity failed to evacuate any pus. On the 22d day ulceration and sloughing of the cornea began as a result of pressure, and the temperature varied from 100 to 103° and the pulse was rapid and weak. On the 25th day the lids of the other eye became similarly affected. One eyeball collapsed as a result of the sloughing, but in the other eye this was prevented. The patient slowly recovered. It was evident that the thrombus could not have been an infected one. The child had passed through measles and typhoid fever within a few months of the onset of the mastoiditis. The second case was that of a child of seven years, admitted to the hospital in April, 1901. It had suffered from a chronic otorrhea and more or less headache. There was no swelling over the mastoid, but tenderness on deep pressure. There was convergent strabismus and optic neuritis in the right eye, and the gait was slightly staggering. The mastoid was opened and found normal, and the skull was then opened over the left cerebellar lobe expecting to find an abscess, but none was found. The patient did well, but soon became stupid and a hernia of the cerebellum occurred. The postmortem showed softening of the frontal lobes and a tumor, the size of a hen's egg, in the right lateral lobe of the cerebellum. The lower lobe was softened. The aqueduct of Sylvius and the ventricles were greatly dilated. The microscopical examination had not been completed.

Report of an Exploratory Operation for the Relief of a Possible Cerebellar Tumor or Abscess. Recovery from Operation. Death Three Months Later. Autopsy.—Dr. T. Passmore Berens of New York read a paper with this title. The patient was a child of fourteen years, who responded slowly though correctly to questions. Paralysis of sixth, seventh and eighth nerves, vertigo, vomiting, progressive paresis of extremities. Operation gave only temporary relief, and death occurred eventually from hemorrhage into the brain. The autopsy showed a large mass involving the pons and upper half of the medulla, which was found to be a glioma.

Dr. W. C. Phillips said that he had followed the case reported by Dr. Berens, and remembered that at the time of operation not one of the otological staff of the hospital was convinced that it was an operative case. The operation was done at the request of the neurologists, and in the manner indicated by them.

Dr. Berens said that the subsequent history showed the operation to have been justifiable because the boy was entirely relieved of his pain and greatly relieved of vomiting, probably by the drainage of the cerebro-

spinal fluid, and his life was prolonged, perhaps at least two months, by the operation.

The Pathology and Diagnosis of Otitis Media In-sidiosa (i. e., Sclerosis).—Dr. Henry J. Hartz of Detroit presented this paper. He said that the hyperplasia began within the bone, and involved especially the articulation of the stapes and the oval window. This process constitutes not only a hyperplasia but also a hyperostosis, and metaplasia might localize itself in any of the structures of the labyrinth and in the chain of ossicles. When confined to the labyrinth the integrity of the acoustic nerve might be affected in a purely mechanical way, and induce Ménière's complex and symptoms. In this sclerotic process the cartilage disappeared, becoming converted into osseous tissue, and when the tip of the cochlea was involved the patency of the Eustachian tube was threatened. In most cases the membrane of the middle ear had been found thickened as a result of the initial hyperemia, but there were few signs that the disease was the result of middle ear suppuration. Rheumatism, gout, syphilis and scrofula and diseases of the nasopharynx, such as adenoids and enlarged turbinates, were looked upon as predisposing causes. The duration of the process had been known to vary from three to 30 years. The diagnosis was made by the exclusion of all other forms of progressive deafness and by the functional test. Statistics showed that about 10 per cent. of all middle ear diseases were examples of true sclerosis or the result of spongy formations. There was usually a high degree of deafness in both ears, and the process began usually between the age of twenty and thirty years. Women were more often affected, and 17 per cent. arose during the puerperium. The deafness of old age must be excluded. Most important of all was the exclusion of catarrhal and suppurative diseases of the middle ear and tube. By the determination of the lower tone limit one could say whether the sclerosis was in the sound-conducting apparatus. Dr. Hartz exhibited Professor Bezold's continuous tone tuning forks, and demonstrated the mode of using them. Microscopical sections of the labyrinth and middle ear showed spongy formation in the cochlea and ossicles. Some of the specimens were made by Liebermann and Katz and Bezold.

Dr. William L. Ballenger of Chicago said that this paper was the clearest exposition of the subject that he had heard. The cases had been divided into two broad classes, one involving the oval window, and the other in which the disease was chiefly confined to the labyrinth. To this might be added a third class, made up of a mixture of these two. A positive diagnosis was usually made only by microscopical and postmortem study. The disease was not always slowly progressive, but sometimes proceeded by leaps and bounds. This was probably to be explained by the involvement of the region of the greatest functional activity, i. e., the region of the oval window. If the more remote parts of the bone were involved then the deafness would be more insidious. He believed with Dr. Hartz that the functional tests of the ear were as important to the otologist as the ophthalmoscope to the ophthalmologist, and he was, therefore, pleased that this set of instruments had been exhibited.

Dr. C. R. Holmes said that the subject was comparatively new, and not very easy to master, although certainly a very important one as stated by the last speaker. The tests were time-consuming, but it would well repay the patient to liberally remunerate the specialist who would carefully make the differential diagnosis, and so save months of inappropriate and ineffective treatment.

Prognosis in Chronic Catarrh of the Throat and Ear. Some Remarks by a Would-not-be Pessimist.—Dr. Thomas J. Harris of New York read a paper on

this subject with the object of eliciting discussion. He said that most cases of catarrh were dependent upon an underlying cause, e. g., the lymphatic diathesis, a chronic derangement of the gastro-intestinal canal, the uric acid diathesis, etc. The common error was to look too intently at the local picture. He believed our progress in the treatment of chronic catarrh of the ear had been very slight as compared with advances in diagnosis. Tubal therapeutics and pneumo-massage were at best too often of temporary benefit, and sometimes of decided harm. A promise to check the deafness was often all that could be given with safety. Prophylactic measures were of the greatest value, especially the early removal of the ever-present adenoids.

Dr. Wendell C. Phillips said that he believed the author of this paper made these pessimistic statements only to arouse opposition and excite discussion. We were all conscious of failures in certain cases but we should not admit that we were not successful. He did not think it was possible, for example, to convince any member of this society that it was desirable to abandon the use of the Eustachian catheter, even though aurists of high reputation, having lost interest in their work, had stated their belief that this treatment was almost useless. He was glad to have the opportunity to champion the use of the catheter when intelligently applied.

Dr. C. R. Holmes said he believed in the use of the aural catheter. It was well not to promise too much in these cases. All that he would say to his patients was that he hoped to be able to secure to them as good hearing as they possessed when in their best physical condition. He was decidedly opposed to the removal of nasal spurs unless they were distinctly responsible for some pathological condition. In some cases a turbinectomy would make the subsequent use of the aural catheter unnecessary. Much depended upon habits of life.

Dr. T. Passmore Berens said that the practice of removing turbinates wholesale was no longer popular, and more dependence was placed upon hygienic treatment.

Dr. J. A. Stucky said that at the present time he used the catheter once where formerly he used it perhaps 50 times, and he did not interfere with spurs unless they were actually doing harm. He did, however, remove pathological conditions of the turbinate.

Dr. Max Goldstein said that if the author of the paper had confined his criticisms to the sclerotic form most of those present would probably agree with him. One should sharply distinguish between the sclerotic and the hypertrophic form.

Dr. W. L. Ballenger said that he understood that all the author of the paper desired was that each case should be thoroughly studied and "fashions" in treatment avoided. We should not set our faces against the removal of nasal spurs because at times these operations do much good.

Dr. G. L. Richards mentioned a case in which after the removal of an obstructing nasal spur the hearing improved very much without direct treatment of the ears.

Case of Thyroid Gland Tumor in the Larynx.—

Dr. Walter A. Wells of Washington, D.C., reported this case. He said that this condition was very seldom met with, there having been only nine or 10 cases recorded in which normal thyroid gland tissue had been found in the larynx. His own case was peculiar in that the main thyroid showed microscopically only colloid degeneration, whereas the intralaryngeal tumor had the microscopical characteristics of an adenocarcinoma. In this case he made use of the styptic action of gelatin with good result. The patient was a woman of fifty years who had had a goitre for many years before coming under observation. She sought relief because of a sensation of choking and paroxysms of dyspnea. Al-

though the history indicated a strong hemorrhagic tendency after operative interference, the tumor was removed at several sittings, gelatin being freely used locally and successfully to control the hemorrhage. Out of nine reported cases of thyroid in the larynx, six occurred in women and four had been reported from one clinic, making it probable that this condition was not so rare as the statistics seemed to indicate.

Dr. M. A. Goldstein asked how the gelatin had been used in this case.

Dr. Wells replied that in a 10-per-cent. sterilized solution of gelatin to which had been added 1 per cent. of calcium chloride and half of 1 per cent. of sodium chloride, was employed. It was applied on a cotton swab before and throughout the operation.

Foreign Bodies in the Larynx and Lower Respiratory Tract in Children, with Report of Six Cases.

—Dr. Thomas H. Halsted of Syracuse read this paper, reporting six tracheotomies in children under two years and a half old for the removal of foreign bodies lodged in the larynx and bronchus. Of the six cases five recovered and one died. At the time of operation dyspnea was urgent in all. In the cases reported the first spasm partially subsided after a few moments and often misled both parents and physician to believe that the foreign body had been ejected. The dyspnea recurred after a short interval and became constant with at times exacerbations. Cyanosis and epigastric recession were present in all cases and because of the nature of the foreign bodies in his cases in only one would the X-ray have been of service. In his first case, a piece of the shell of a pecan nut was firmly lodged in the ventricle of the larynx. In the second case it was a coffee bean which remained in the right bronchus for one week. In the third case a peanut was extracted with much difficulty from the right bronchus where it was wedged at a distance of four inches from the tracheal opening. The fourth case was somewhat similar to the third one excepting that the nut was coughed up to the tracheal opening after the trachea had been opened and the trachea tickled with a cotton covered probe to excite cough. The fifth case terminated fatally, death due to pneumonia and the foreign body not found or removed, and although no autopsy could be obtained there was every reason to believe that the case was one in which a gold ring had lodged in the bronchus. No X-ray apparatus was at hand at the time. The last case reported was that of a twelve-months-old baby, in whom three fragments of egg shell had lodged in the larynx remaining there for two weeks, causing great dyspnea. The consent to perform tracheotomy could not be obtained for two or three days after the diagnosis was made and then the child was in bad condition, but nevertheless the operation was successful and the child recovered. The unreliability of statistics regarding operative and let-alone treatment was well shown by the fact that the author knew of a case in which a child died of pneumonia, and the discovery of a shoe-button in one of the bronchi was the first knowledge that the parents or physicians had that a foreign body had passed into the air passages. It was unsafe, the author thought, to postpone opening the trachea, particularly in children, after the ordinary methods had failed to remove the foreign body.

Dr. G. Hudson Makuen said that Dr. J. A. Killien had reported the removal of a fish bone 22 mm. long from the left bronchus of a child three and a half years old, under control of the eye by means of bronchoscopy without injury to the tissues, and that Dr. A. Coolidge, Jr., of Boston had spoken of the ease with which foreign bodies may be removed from the trachea and bronchi through a straight tube placed in a previously made tracheal opening artificial light being reflected into the

tube from a head mirror; and had reported three cases in which he had employed this method with entire success.

A Simple Method of Correcting Deflections of the Nasal Septum.—Dr. George Fetterolf of Philadelphia read this paper. The author emphasized the importance of recognizing the fact that abundant tissue is always present and classified the different forms thus: (1) Deviation without thickening; (2) deviation with thickening, and (3) thickening without deviation. The most difficult to correct were those embraced in the first two classes. The main difficulty that he had experienced had been in the removal of the excess of tissue. The operation should be so planned as if possible not to disturb the muco-perichondrium of the concave side. He employs general anesthesia and also applies adrenalin solution to the septum. He makes use of a specially devised saw-file, and makes one, two, or three grooves to the perichondrium on the opposite side. The antero-posterior excess can be removed along with the vertical by having his grooves cross each other. The instrument is made in three sizes so as to adapt it to the removal of varying degrees of redundancy, and with it a V-shaped cut can be readily made. A truncated form is used when the grooves already made under the sharp instrument need to be widened. The tube is ordinarily not removed for five days after the operation. By the method described, preliminary dissection of the mucous membrane is unnecessary, and the operation can be completed in three or four minutes. The two margins of the V-shaped cut are exactly parallel and thus accurate completion and quick healing are promoted.

Dr. J. A. Stucky said that he had been deeply interested in this paper because at the meeting of the Southern Section considerable criticism had been directed against the working qualities of Dr. Kyle's saw.

Dr. William R. Lincoln of Cleveland said that he understood this new instrument had been devised to perfect the technic of Dr. Kyle's operation. The instruments of Asch and others were generally thought to be excellent for cases not urgently requiring operation.

Dr. M. A. Goldstein said that the mechanical features of this instrument seemed to him to constitute a distinct advance on former methods. The instrument takes up very little room in the nasal cavity, and its cutting edges operate on both the in and out strokes of the saw. He thought that with this instrument the operation could be made submucous more easily than with any other instrument.

Dr. D. J. G. Wishart asked if the instrument had ever been adapted to an angle handle; he thought that this would be an improvement.

Dr. D. Braden Kyle said that he had employed this V-shaped operation for the correction of deformities of the nasal septum for six years. When describing this operation about three years ago he had only made a limited use of it, but in the last three years this had been the only operation that he had performed. At that time he made use of a saw which, if properly made, worked satisfactorily in cutting out the V-shaped piece and accomplishing two things: (1) The cutting reduced the redundant tissue, and (2) the septum was broken up. The V-shaped file does away with one instrument and shortens the operation materially. There was no bulging of the septum after the operation and no redundant tissue if a sufficiently large V-shaped cut were made. With the V-shaped operation, and particularly with the saw-file, perforation of the septum was practically wholly guarded against. The septum must be made to swing freely from the top. Before taking out a number of V-shaped pieces it was well to dissect up a flap of mucous membrane, which is afterwards allowed to fall back again. He had never seen any bad effects from

even the prolonged use of his metal tube-splint. The tube should be flattened next to the septum.

Dr. Fetterolf, in answer to a question from Dr. T. H. Farrell as to why general anesthesia was employed in this operation, said that the object was to secure complete relaxation of the patient and avoid possible fainting during the operation.

Paraffin Injections.—Dr. Harmon Smith of New York by special invitation demonstrated his method of making paraffin injections for the correction of nasal deformities.

Dr. C. E. Munger of Waterbury, Conn., said that he had seen some of these cases, and he thought the best result was one in which there had been both a lateral and an antero-posterior deformity. He had had only one case, and in that one 25 minims of the paraffin had been injected, and apparently with good result.

NORTH BRANCH PHILADELPHIA COUNTY MEDICAL SOCIETY.

Thursday, June 19, 1902.

Should Physicians Dispense?—Dr. H. C. Masland read a paper entitled "To What Extent, if at all, Should Physicians Dispense?" in which he referred to the fact that in the early history of medicine, and even at the present day in the rural districts, the physician was compelled to compound his own prescriptions. In thickly populated districts he was soon displaced by the druggist who was more expert in this work, and he held sway until the introduction of the tablet triturate and the compressed tablet. This has induced many practitioners to assume the system of dispensing, the points in the favor of this method being cheapness, uniformity in strength, palatability and absorptibility. The objection often raised that these tablets contain inferior drugs was thought to be refuted by the fact that the majority of manufacturers obtain them direct from the field of production, which would indicate a purer and stronger article, which the author felt to be the case. Another strong point in favor of tablet dispensing was that the physician would carry his medicines with him and administer them at once instead of waiting to have a prescription filled, a very important point in emergency cases. The ingredients it was felt would be more thoroughly mixed than could be done by hand, and in dispensing in this manner the patient is prevented from constant renewing of the prescription without consulting the physician, which has a very deleterious effect. Remedies deteriorating with age should, of course, be dispensed by fresh prescriptions.

Dr. W. S. Higbee thoroughly approved of physicians dispensing remedies in the shape of tablets, believing that the tablet possessed the advantages of immediate application of the remedy without waiting to have the prescription filled; that the patient could not keep on taking the same medicine indefinitely without being seen, as is the case with prescriptions which patients too frequently have renewed time after time, in many instances to their detriment. In addition to the tablets, the speaker keeps a certain number of liquid preparations in his office, and dispenses these to his patients in place of giving prescriptions when indicated, believing that in both of these ways he secures much purer and more accurate compounds than by having the prescriptions taken to any drug store indiscriminately by the patient. While it was thought to be unethical to use prescription blanks with the names of drug stores thereon, better results have been obtained by having prescriptions filled at certain pharmacies in each neighborhood.

Dr. J. Cardeen Cooper felt that there should be no

ethical objections to physicians maintaining drug stores. As to whether or not the physician should dispense, he believed that point should be decided solely from the consideration of what is best for the patient from a scientific standpoint. It was not felt, however, that any set formula should be given for all conditions, and if the physician has not exactly the remedy at hand which he desires to prescribe without any other drugs combined, it was recommended that he write a prescription. In conclusion, the opinion was expressed that the scientific status of the profession would be advanced by the discontinuance of dispensing by all physicians, and the discountenancing of all proprietary remedies, prescriptions being written for liquid or tablets according to convenience of administration and the physiological action of the remedies.

Dr. A. Bern Hirsh gave a résumé of the development of tablet dispensing which began about two decades ago, and which he believed had been largely augmented by the influence of the methods practised by homeopathic physicians. The deleterious practice of prescribing some set formula for every case was deprecated, and the opinion expressed that this condition of affairs would not exist if the practitioner would devote more time to the study of his *materia medica*.

Dr. Wilson Buckby believed that better results would follow the administration of liquids than of remedies in tablet form, and when the latter mode was employed, the tablets should be so made that they will dialyze through the tissues. He did not consider, however, that there was anything unethical in a physician dispensing.

Dr. H. Brooker Mills felt that the practice of dispensing by the physician had been largely augmented by the increasing tendency of certain druggists to prescribe and dispense certain remedies, and the inclination on the part of the patient to continue indefinitely having a certain prescription filled and refilled, simply because he believed it was doing him good, when in truth, in many instances it is doing him injury. The two chief objections urged were the changes taking place, which in some instances render the tablet inert, and the liability of incompatibility of drugs in the tablet. The second objection, however, was thought to be more than overbalanced by the fact that practically all the formulas for these tablets were approved of by expert pharmacutists. It was admitted that this would increase commercialism, but there was felt to be no reason why the physician should not invest his money in any manner he desired, either by opening a drug store or dispensing his own medicines.

Dr. Carle Lee felt believed that better results would be obtained if a physician could uniformly have his prescriptions put up by the same druggist, and believed that the indiscriminate manner in which prescriptions were taken by physicians to different pharmacies had led many practitioners to adopt the method of dispensing themselves.

Dr. Wendell Reber expressed the opinion that the majority of physicians had been forced into dispensing by the inferior and impure quality of the drugs which are oftentimes used by some druggists. The tinctures are particularly apt to have this failing, tincture of belladonna and aconite having been found to be inferior by the author, the reason assigned for it being that they are usually made from the fluid extract and sufficient care is not exercised to see that the alcohol is of the proper percentage.

Dr. William K. Shea felt that the question must be an individual one, depending largely upon the disposition of the patient, and he believed that just as good results could be obtained from a first-class tablet as from a liquid.

Dr. S. P. Gerhard stated that he had been led to begin office dispensing by having druggists fill prescriptions improperly. The greatest objection, he felt, was the liability of the practitioner falling into the habit of making the symptom fit the medicine, rather than moulding the medicine according to the disease.

Dr. L. C. Peter believed that the two principal questions in this connection were: (1) Is the dispensing of tablets practicable? and (2) Is it ethical to dispense tablets? both of which he answered in the affirmative, supporting the first affirmative by the fact that it had been demonstrated that the tablets were made from the active principles of the drug and were so soluble that they practically assumed a liquid form as soon as they entered the stomach.

Dr. J. H. Mudgett was decidedly in favor of physicians dispensing their own remedies, and also expressed the opinion that an increase in dietic and hygienic treatment and reduction in drug treatment would be followed by gratifying results.

In closing Dr. Masland expressed the opinion that more uniform dosage could be secured by the administration of medicine in tablet form, and also that many remedies which were indicated to be given as liquids, such as the iodide and bromide of potassium, would be best administered by dissolving in water a tablet containing a known amount.

BOOK REVIEWS.

THE ECLECTIC PRACTICE IN DISEASES OF CHILDREN. By WILLIAM NELSON MUNDY, M.D., formerly Professor of Physical Diagnosis, Hygiene and Clinical Diseases of Children in the Eclectic Medical Institute, Cincinnati. The Scudder Brothers Company, 1902.

As in King's Eclectic Dispensary, we find little in this book to distinguish it from "non-eclectic" books of the same nature, except the strong tendency to praise vegetable drugs, many of which have dropped out of general use, and the treatment of symptoms. A frequent, small, sharp pulse, frontal headache of the left orbit, and red papillæ at tip of tongue demand rhus; headache in right side with flushed right cheek requires bryonia. After an introductory discussion of various remedies and their therapeutics, without any consideration of their physiological action, the author takes up in detail the various diseases, classified as in other similar works. Pathology is given but little consideration; symptoms are dwelt on at length, and treatment is concisely and dogmatically set down as almost specific. The author makes free use of therapeutic measures other than drugs, such as hydrotherapeutics, massage, etc. Among the "specific medications" for the different manifestations of typhoid fever are mentioned, aconite, veratrum, rhus tox, for frontal headache, gelsemium, belladonna, hyoscyamus, passiflora, whiskey, sodium sulphite, baptisia, hydrochloric acid and many other remedies. The book must be a valuable addition to the library of the "eclectic" practitioner.

A MANUAL OF OTOTOLOGY. By GORHAM BACON, A.B., M.D., Professor of Otology in Cornell University Medical College, New York; Aural Surgeon, New York Eye and Ear Infirmary. Introductory Chapter by CLARENCE JOHN BLAKE, M.D. Third Edition, Revised and Enlarged, with 120 illustration and seven plates. Lea Brothers & Co., New York and Philadelphia.

THIS new edition follows very promptly on the second, as that did upon the first, evidence of value and demand. We do not attach much importance to the

enlargement and revision, as little change seems to be made in the previous editions. The brief consideration of the value of the more recent use of lumbar puncture in cases of leptomenigitis of otitic origin, gives the book, of course, the gain of having added to it the latest new feature. But this third edition owes its value to its unique character as a plain, sensible manual more than to any changes made in it. That is to say, it continues to deserve well, on the ground of its original merit.

DISEASES OF THE NOSE, PHARYNX, AND EAR. By HENRY GRADLE, M.D., Professor of Ophthalmology and Otology, Northwestern University Medical School, Chicago. Handsome octavo of 547 pages, profusely illustrated, including two full-page plates in colors. Philadelphia and London. W. B. Saunders & Co.

It is the author's intention to present these special diseases as he has seen them during an experience of 25 years, while in touch with the work of others. He states that it has been his aim to answer in detail those questions regarding the course and outcome of diseases which cause the less experienced observer the most anxiety in an individual case. This method has resulted in a work without the brevity and sharp divisions of a student's compend, but one adapted to the wants of the general practitioner. The descriptive material is clearly written and can be easily read. A liberal amount of space is devoted to topographic anatomy with numerous illustrations drawn from all sources. The therapeutic measures described and advocated by the author are those which in his opinion have stood the test of experience, and all others, although sanctioned by textbook tradition, have been wisely omitted. The first part of the work is taken up with the diseases of the nasal passages and pharynx. After an introductory chapter on the special anatomy of the respiratory passages, there follows an excellent chapter on general etiology and hygiene of nasal and pharyngeal diseases. The succeeding chapters contain complete descriptions of the various diseases, the symptoms, etiology, pathology, diagnosis and treatment being separately considered. An excellent innovation is the brief but valuable paragraphs on "history and literature" appended to many of the chapters. The second part of the book is concerned with the diseases of the ear and is treated in the same manner. The illustrations are good and, although none too numerous, are well selected, especially those relating to the topical anatomy.

BOOKS RECEIVED.

The Medical News acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the Medical News will shortly appear.

ELEMENTARY HYGIENE FOR THE TROPICS. By AZEL AMES, M.D. 12mo, 180 pages. D. C. Heath & Co., Boston.

A PHYSICIAN'S PRACTICAL GYNECOLOGY. By W. O. HENRY, M.D. 12mo, 229 pages. The Review Press, Lincoln, Neb.

TRANSACTIONS OF THE CHICAGO PATHOLOGICAL SOCIETY. Volume IV. American Medical Association Press, Chicago.

THE PRINCIPLES AND PRACTICE OF BANDAGING. By GWILYM G. DAVIS, M.D. 12mo, 146 pages. P. Blakiston's Sons & Co., Philadelphia.

TREATISE ON DISEASES OF THE SKIN. By HENRY W. STELWAGON, M.D., Ph.D. 8vo, 1115 pages. W. B. Saunders & Co., Philadelphia and London.